

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF PUBLIC INSTRUCTION

COURSES OF STUDY
FOR
CONTINUATION SCHOOLS



Reprint

Bulletin No. 47
Harrisburg, Pennsylvania
1928

COURSES OF STUDY FOR CONTINUATION SCHOOLS

The first three sections of the Continuation School courses of study on Special Needs of Continuation School Pupils, Special Methods for Continuation School Pupils, and General Content of Instruction, present the fundamentals which apply to all the succeeding outlines. The teacher should thoroughly study these three sections before studying the later sections, and should interpret the detail of the later sections with constant reference to these fundamentals.

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DEPARTMENT OF PUBLIC INSTRUCTION
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SYLLABUS FOR CONTINUATION SCHOOLS

I. SPECIAL NEEDS OF CONTINUATION SCHOOL PUPILS

Any person who is thoroughly trained in the essentials of sixth, seventh, and eighth grade work and who knows how to apply these essentials to the experiences of every day life, has the foundation of a good education. But very few continuation school pupils are so thoroughly trained; many of them have left school at the end of the sixth or seventh grade; most of them are of the type that profited least from the earnest efforts of previous teachers; practically none of them have the least skill or experience in applying to the problems of every day life that which they have been taught. The pupils do not realize these facts, and if placed in a class which is definitely labeled "Seventh Grade Arithmetic" or "Eighth Grade English" they protest that they have had that work already, or that they never did like such work. This attitude creates dissatisfaction among the pupils.

Accordingly the continuation school administrator and teacher must recognize that arithmetic, geography, English, etc., are no longer ends in themselves, lessons to be taught from a book and by grade school methods. The stress must be laid on the application of the subject matter and the methods to the problems of every day life of the pupil. Arithmetic, English, etc., are now tools to be used with accuracy, speed, and intelligent understanding in order to accomplish a definite end. The motivated lesson, the socialized recitation, are terms which must have a vital application and a real meaning in the continuation school. The very pupil who declines to show any interest in abstract exercises in multiplying mixed numbers or writing compositions, will work with intelligent interest on figuring a real pay roll or compiling a written application for a real job. Practically without exception, those continuation school classes which have not been successful trace their failure to the fact that the instructor tried to teach the subject instead of trying to teach the pupil; directed the work from the point of view of what the instructor thought the pupil ought to be interested in, instead of what the pupil really was interested in; and conversely, those continuation school classes which are most successful trace their success to an instructor who by sympathetic understanding of the real interests of the pupils, by actual knowledge of detail relating to the conditions and requirements in which the pupils live and work, motivates the class room work and gives the pupils instructional material which they themselves recognize as vital, practical, and worth while.

The ability of the pupils to do such work is much more a matter of age, size, general intelligence, interest, environment, than it is a matter of how many grades in the public schools have been covered. Where the pupils can be classified and taught with reference to previous schooling so much the better; but the work is being done with marked success in continuation schools which are so small that such grading is impossible. If the number of pupils in a class is not more than twenty, individual work is possible. As soon as these pupils realize that they are being taught as individuals, and not as impersonal members of a class, they respond with interest and with industry.

The three most effective sources from which to derive instructional material for such motivated work are, the pupils' employment on the job and at home, practical work, and vocational work which includes prevocational opportunity. For all pupils the experience at home and in employment can be used to motivate every phase of class room instruction in arithmetic, English, industrial geography, civics, hygiene, etc. In like manner the courses in practical work for boys and for girls when introduced in a school, open up a field of interest and activity from which every phase of the school can be motivated. The equipment needed for such work is not expensive, an alert and willing teacher does not realize how much of this work can be successfully carried on until the attempt is made. Existing equipment and special teachers in other schools should always be utilized where the number of pupils in the continuation school class does not permit separate equipment and special teachers; but it is of the utmost importance that the continuation school teacher keep in close touch with this work in order to utilize it for the relating and motivating of other studies.

When it is possible for a continuation school to install real prevocational work which leads into vocational training, the results are most satisfying. Commercial classes for both boys and girls, while they appeal to a relatively small percentage of continuation school pupils, are wonderfully helpful to those pupils to whom they do appeal. The problem of getting teachers and well proved instructional material is easier of solution than the same problem for industrial classes. It is in the industrial prevocational or vocational class that the boys' problem is really solved. Nine out of ten continuation school boys when asked what they would like to be doing at the age of eighteen years, reply that they would like to learn a trade. And then when pressed to name the trade or to give a reason for the choice, their replies indicate how little they know as to their own capacity, the requirements of a trade, and the means and methods of acquiring such knowledge. In continuation schools where these boys have the opportunity to try themselves out on simple trade processes,

to stand up to a man-size machine under a competent trade-trained instructor, the success of the work is its own ample justification. Difficulties of attendance and discipline almost disappear, the progress of pupils is measurable and rapid, the entire teaching curriculum becomes enriched, and the interest and industry of the pupils are noticeable.

Of course it is not possible to get far in definite vocational instruction in a few hours each week. That is not the purpose of the work. It is intended to give the pupil the opportunity to discover his own interests and aptitudes. But even so, the astonishing fact is how much they do learn and what good work they accomplish.

The continuation school has many functions, which need not all be enumerated here. But its most essential functions are to conserve the education which has already been invested in the pupil, to tide over the difficult transition period in which through experience the child is adjusting himself to employment, to enable the child to maintain a beneficial contact with school thought and school guidance, during those years when character is becoming fixed and permanent habits are being formed, to the end that good industrial and civic citizenship be developed. This contact with school cannot effect its benefits unless the child is interested, and the child will not be interested unless the work is motivated. Therefore, it is essential that every continuation school teacher appreciate and practice those methods of instruction which motivate the work and furnish the means by which the aims of the continuation school can be realized.



11. SPECIAL METHODS FOR CONTINUATION SCHOOL PUPILS

The organization of classes as well as the organization of instruction material are made difficult in a continuation school because, after every effort has been made, each class will contain pupils of varying degrees of ability, new pupils may enter and old pupils, becoming sixteen years of age, may drop out during any week of the year. This interferes with sequence and progression in laying out a course of study. On the other hand, most of the pupils have already had the essentials of the basic studies so that sequence and progression are not such vital factors as they are in graded school work. Accordingly the continuation school teacher can plan to present, during a series of weeks, a series of topics in each study, thus making each lesson a unit in itself. It is called a Unit Lesson because every lesson in the continuation school should be a unit in itself. The presentation, study, and recitation must be completed within the time set for that lesson. From four to ten of these unit lessons may constitute a short unit course. It is necessary for the teacher to plan in outline the topics for the year and the units for several weeks in advance, and to lay out in detail each week the lesson plan for the next week. This detailed lesson plan involves a great deal of work, and should be preserved for revision and use during the next year.

A. The short unit course or series of lessons may deal with:—

1. *A set of topics* in a single subject such as arithmetic, English, or industrial geography, such as simple decimals, a business letter, civic problems involved in taxation, raw materials for a local silk mill.

2. *A series of projects* in vocational work such as:— in household arts, the preparation of breakfasts; in a sheet metal shop, seams, soldering, riveting, and pattern development on simple cylinder work; in an electrical shop, simple bell wiring and installation; in mechanical drawing, the developing of working drawings of a half dozen objects or parts so selected as to involve the preliminary fundamentals of drawing; in commercial work, a course in filing, indexing, and cross reference. The following are typical unit lessons:

1. Unit Lesson: Recreation.

Aim:—To show how the community provides for wholesome recreation.

Approach:—Have pupils mention forms of recreation that occur to them. Then work out a definition of recreation and a statement

of its purposes. Emphasize the difference between recreation and dissipation. Are the facilities for recreation adequate in your community

Development:—How community provides for recreation:

School recess.
 Playgrounds and athletic fields.
 Athletic associations.
 Gymnasiums.
 Concerts.
 Theatres and moving pictures
 Libraries.
 Museums and art galleries.
 Clubs and associations.
 Boy Scouts.
 Camp Fire Girls.

Reaction:—Oral or written reports on sections of the lesson as developed.

References:—Finch—Everyday Civics—pages 72 to 86.

2. Unit Lesson—Cooking.

Scalloped salmon.

- a. Classification of fish.
 - (1) White fish—fat secreted in liver. Cod, haddock, flounder, smelt, perch.
 - (2) Oily fish. Salmon, eels, mackerel, bluefish, herring.
- b. Food Value of fish.
 - (1) Less stimulating than meat.
 - (2) White fish easier of digestion than oily fish.
 - (3) Oily fish should not be eaten by those of weak digestion.
- c. Preparation of scalloped salmon.
 - (1) Portions.
 1 can salmon; 1 egg; 1 cup milk; 1 teaspoon salt; 2 tablespoons flour; $\frac{1}{2}$ teaspoon pepper; 2 tablespoons butter; 1 cup crumbs.
 - (2) Method.
 - (a) Remove salmon from can, remove skin and bones and mash with fork.
 - (b) Make white sauce of butter, milk and dry ingredients.
 - (c) Add white sauce to salmon.
 - (d) Add beaten egg and mix well.

(e) Pour into buttered baking dish and cover with crumbs.

(f) Bake 15 minutes in hot oven.

B. Job Sheet Lessons. In the foregoing each unit lesson is covered in the forty minutes or the two hours devoted to the civics lesson or the household arts work, as the case may be, and has no necessary relation to the work of the other hours of the school day. A better plan is to tie up or relate to the unit topic or project all the other studies of the day so far as they can be made to have a real relation. Thus a sequence or progression over a unit course of six weeks will be determined by the vocational projects, or—for instance—civics projects, involved; and all the other studies, arithmetic, English, etc., will be related as much as possible to this central project.

The extent to which this relating of instruction will be carried out in planning a lesson or series of lessons depends upon how many different teachers are involved and how successful they are in keeping in touch with one another; that is, on whether the lesson plan is designed to apply to two hours of shop work, to four hours of shop and related work, or to the full eight hours for a given pupil in a given week. Such a lesson plan developed in detail is based on a job or operation in industrial, commercial or home economics work. It is called a Job Sheet. The following is such a typical lesson plan:

Job Sheet

Unit Course—Elementary Carpentry.

Lesson No.—Job 1 Nail Box, $2\frac{1}{4}'' \times 3\frac{3}{4}'' \times 10''$, outside dimensions. A simple perspective drawing showing dimensions is on the lesson sheet or on the blackboard.

Material from Stock

1 pc. W. P. $\frac{1}{2}'' \times 2'' \times 30\frac{1}{4}''$

1 pc. W. P. $\frac{1}{2}'' \times 4'' \times 10\frac{1}{4}''$

Finished Dimensions

2 pc. $\frac{3}{8}'' \times 1\frac{7}{8}'' \times 10''$side pieces

3 pc. $\frac{3}{8}'' \times 1\frac{7}{8}'' \times 3''$cross pieces

1 pc. $\frac{3}{8}'' \times 3\frac{3}{4}'' \times 10''$bottom piece

Operations

1. Select stock.
2. Cut off to rough dimensions.
3. Plane faces and edges of combined side and cross pieces.
4. Gauge to thickness and width.
5. Plane to thickness and width.
6. Lay out lengths for side and cross pieces.
7. Cut to length.

8. Square ends if necessary.
9. Assemble sides and cross pieces.
10. Plane bottom piece, gauge, plane to gauge, lay out and cut to length.
11. Assemble sides and cross pieces, mark and nail.
12. Square side pieces with bottom and nail.
13. Set nails, plane bottom flush with side.
14. Sand paper outside.

Cautions

1. Set nails proper depth.
2. Do not round edges in sand papering.

Related Drawing

1. Freehand working drawing with dimensions.
2. Mechanical drawing, three views. Assembly drawing showing position of nails. Scale 3" equal 1 ft. Figure dimensions of rough stock and finished stock from drawing.

Safety and Care of Tools

1. Avoid cutting the hand in using back saw.
2. Careful use of plane over set nails.

Trade Terms

1. Butt joint.
2. Gauge.
3. Assemble.
4. Lay out or lay off.

Related English

Read and discuss Wood and Smith, *Prevocational Industrial Arts*, p. 42. Nails and Wood Fasteners, p. 92. Classification of the terms used on pages 92 and 93.

Related Mathematics

1. Figure cost of rough stock for one box.
2. Include nails in figuring cost.
3. Discuss overhead cost.
4. Discuss and estimate approximate percentage of waste stock.
5. Figure cost of equipping 10 work benches with nail boxes.

Related Guidance

Gowin and Wheatley—*Occupations* Ch. IX—The Building Trades. Davis—*Vocational and Moral Guidance*—Ch. VIII—Choosing a Vocation. Local opportunity in carpentry.

Industrial Geography

Dryer—*Elementary Economic Geography*—pp. 138-140. Smith—*Commerce & Industry*—Lumber. Get prices and uses of lumber

handled in local yards, especially the white pine used for the nail box.

- C. *Project Lessons.* Intermediate between the unit lesson and the job sheet is a third type designed to cover a large part or all of the day's work. It is constructed on topics or projects connected with experiences outside the school with which the pupil comes in contact and is called a Project Lesson.

Project Lesson Plan

Subject:—Taxes

Civics

1. Why are taxes collected?
2. How are they levied—city, state, federal?
3. Reasons for each type of tax; general, property, personal, land, income, corporation, direct and indirect, school taxes.
4. Method of assessment.
5. Defects in our taxing system.
6. Proposed remedies.
7. Duties of the citizen with regard to taxation.

Arithmetic

1. What is the assessed valuation in this town? The rate of assessment?
2. What is the proposed budget for schools, for general expenses? Figure the millage for the school tax; for the general tax. Figure amount of school tax on property of certain value, rate of assessment being given. Same for general tax. Use regular tax blanks. Get actual rates on occupation tax, dog tax, automobile tax. Figure the tax for a known person.

Industrial Geography

Apply these questions to local conditions:—

1. What is the relation between taxation and attracting new industries to a community?
2. Discuss a known factory whose location was affected by tax conditions.
3. Discuss both sides of a special tax on coal, on gasoline.
4. Discuss toll bridges and bridges built by taxation.

Hygiene

1. What is the relation of a sewage system, taxation, and public health?
2. A park system?

English

1. What do these terms mean:—levy, abate, assess, delinquent?
2. Write a letter to the chief tax assessor requesting for cause an abatement in your tax.

Project Lesson Plan

Subject:—Building a Garage

Drawing: Make a simple floor plan and elevation for a two car garage, with dimensions.

Civics and Hygiene: Procure a copy of building permit and of fire restrictions applying to garage construction on your lot. Study and discuss them.

English: Write an application for a permit. Write a letter to a contractor asking for a bid.

Arithmetic: Figure costs based on real prices and quantities to build of frame construction with cement foundation and floor.

D. Content in Lesson Plans

These types of lesson plans are simply suggestive. Fuller details on methods and subject matter are given in the bulletins of the Federal Board for Vocational Education such as Bulletin No. 54 on a Survey of Junior Commercial Occupations and Bulletin No. 57 on a Survey and Analysis of the Pottery Industry and in some recent text books, notably in arithmetic. The academic teacher should not make the error of thinking that this method of lesson planning is limited to vocational work. Guidance, motivated work, the adjustment of the pupil to employment, the application of school room knowledge to practical affairs, are functions of the academic teacher as well as of the vocational teacher.

A lesson plan, carefully worked out along the lines indicated, is an essential and effective device for accomplishing the aims which each teacher has. It may be called an operation card, a job sheet or a lesson plan. It may range from the instruction for performing a single technical operation in a store or factory, or from the direct and auxiliary instruction involved in a basic operation or basic project in a school shop, to the direct and auxiliary instruction involved in a topic or project in guidance or in civics. So far the planning of the lesson concerns itself only with the subject matter of instruction.

E. Method in Lesson Plans

The determining of the *method* of instruction requires further planning, but to the skilled teacher this is quickly accomplished by deciding for each teaching point of the lesson upon:—

1. The aim or objective.
2. The approach.
3. The presentation.
4. The test or reaction.

Obviously a great deal of time and effort is required to accumulate such a set of good teachable lesson plans fitting so far as is practical into a set of short unit courses. But the eight hours per week which each pupil spends in the continuation school is so little that every minute must be used effectively. The carefully prepared lesson plan is the best guarantee for such effectiveness. Yet in spite of careful preparation on the part of the teacher the difference between theory and practice, between planning a lesson and making it function swiftly and satisfactorily with an individual pupil, often brings disappointment. But the experience of successful continuation school teachers has proved that better results are obtained by such lesson planning than by relying on text books or on the inspiration of the moment.

F. Four Kinds of Material Needed

In using such lesson plans the teacher will discover that one pupil will finish the assigned work very quickly. Additional work, perhaps of greater degree of difficulty must be available for this pupil. Another pupil will be stopped in the midst of the work because he is deficient in ability to perform a simple fundamental operation. For instance, in the lesson previously outlined on making a nail box, additional questions on related mathematics, on related English, or on supplemental reading will be needed for the higher grade pupil. The other pupil may fail to "gauge the width" because he does not know how to read a two-foot rule, or may fail to "figure the cost" of material because he cannot point off decimals correctly. The teacher will have available for overcoming such deficiencies one lesson on reading a two-foot rule, and another lesson on pointing off decimals. It is necessary to have the deficient pupil cover this supplemental lesson before that pupil can complete the original lesson as planned. Thus the planning of lessons involves compiling material of four kinds:

1. *For Operations:* A set of projects or topics involving an operation on the tool, machine, or material of shop work, household arts, or commercial work; or involving a basic institution, like taxes; or involving a basic experience, like building a garage. The object of this phase of the lesson or of this set of lessons is to teach the pupil what is done, why it is done, and how to do it.

2. *For Auxiliary Information:* Closely related to the "doing" part of the lesson is related or auxiliary information some of which

should be taught at this time because the operation cannot be performed without the ability to use or understand this information; some of which should be taught at this time because aroused interest of the pupil makes the time opportune.

Material of the first kind and of the second kind may be combined on one lesson sheet as was done in the examples given.

3. *For Deficiencies:* A set of lessons designed to make up deficiencies. Each lesson is very short and simple. In arithmetic it may be a rule, an illustrative problem showing the application of the rule, and a few easy problems for practice. In English it may be a set of simple exercises on capitalization, paragraphing or the parts of a letter. The entire lesson may be presented on a lesson sheet, or it may be merely a reference to a page or paragraph of a suitable text book.

4. *For Supplemental Advance Work:* A set of lessons designed to give more extensive knowledge or practice. Sometimes it will be attached to the original lesson in the form of optional or additional problems or projects. Sometimes it will be a reference to a suitable text or reference book. Again it will be an additional lesson sheet worked out by the instructor.

G. *Objectives in Lesson Planning.* At all times in compiling subject matter for instruction and in working out methods of instruction the continuation school teacher must have in mind the purpose of continuation school instruction, and the needs and capacity of the pupils. The school must be adapted to local needs; courses of study and methods of instruction should be regarded as suggestive rather than as arbitrary; the underlying purpose of the school is training in citizenship which means to help each pupil to make the most of himself, in his relation to his family, his employer and his community; the capacity of the pupils is limited and the time available for school work is short. Therefore, the teacher should concentrate on the simple homely basic things of education and of life. Lessons must be planned and taught scientifically, because the scientific way is the effective way; but science simply means organized common sense. The teacher must be well informed on methods of guidance, of occupational analysis, of job analysis, of scientific lesson planning, and must be unsparing in thought and energy in laying out the work; but the work consists of forty lessons in the year; forty opportunities to affect the life of a child. The objective of the continuation school teacher is not to try to crowd two hundred days of school work into forty, but to teach a few fundamental things and to teach them so well that it may truly be said that the pupil will be a better citizen tomorrow because he is a continuation school pupil today.

III. GENERAL CONTENT OF INSTRUCTION

A. The needs of the pupils.

The general aim of instruction in the continuation school is to meet the special needs of the 14-16 year old working child. These needs are:—

1. In the field of general instruction.
 - a. Review and drill in fundamentals in English, civics, hygiene, mathematics, industrial geography.
 - b. Advance on fundamentals in the same subjects.
 - c. General guidance on need of education, on thrift, health, manners, vocation, recreation, leisure.
2. In the field of prevocational instruction
 - a. A varied shop experience—industrial, commercial, home economics.
 - b. Application of English, civics, hygiene, mathematics, geography and drawing as they are related to each shop experience, and to specific experiences in daily life and in employment.
 - c. Specific vocational guidance as it is related to such experiences.
3. For selected groups or individuals in the field of vocational instruction.
 - a. An intensive shop experience—industrial, commercial, home economics.
 - b. Application of English, civics, hygiene, mathematics, geography and drawing as they are related to such experiences.

B. The relation of pupils' needs to content of instruction.

1. The fact that a given pupil has completed regular seventh grade work indicates that in general instruction material for that pupil in the academic studies pursued in the continuation school should be drawn from eighth grade work.
2. The fact that this same pupil may remain in the continuation school perhaps only six months before becoming sixteen years of age indicates that instruction on points within his powers of comprehension, but usually not covered until the ninth or even tenth grade, should be presented to him in the continuation school.

3. Instruction related to the pupil's activities or experiences in school shop work, in employment, or at home should, because of its intrinsic value and its power to motivate, be given to such a pupil even though this instruction, if given as an abstract subject, would ordinarily be deferred for a year or two.

C. The relation of class grouping to content of instruction.

1. Usually at the beginning of each lesson a few minutes should be devoted to review and drill.
2. When effective teaching is possible the class should receive instruction as a whole.
3. It is impossible for the teacher to instruct all the class all the time. Frequently part of the class should be assigned to preparation of work while the teacher instructs a small group or individual members.
4. Even though a lesson is presented to the entire class the evidence of accomplishment required from the pupils should vary according to their individual capacity. When the same lesson is presented to another class of higher or lower general ability a similar variation in accomplishment should be accepted. Thus if pupils or groups are classified in the teacher's mind as low, medium, and high, the assignment of work in an arithmetic lesson on addition of mixed numbers would be five easy problems, five medium problems and five hard problems. A pupil or a group would be expected to solve five, ten, or fifteen problems according to ability. In like manner after a lesson in written English has been outlined under five headings, the low group would write two sentences under each heading, the medium group would have an option of three paragraphs out of five, the high group would write five paragraphs. The same plan applies to industrial, commercial or home economics work.
5. The control which a single teacher exercises over the correlation of the studies of an individual pupil varies according as the teacher handles a single subject in a large school, two or three subjects in a smaller school, all the academic subjects in a school having one academic teacher and supplemental shop teachers, all subjects, both academic and practical, in the smallest school. This affects selection of content.

D. The relation of lesson planning to content of instruction.

1. Every teacher, academic, industrial, commercial, or home economics, without regard for correlation with other studies will plan unit lessons in a single study and will present them to the class according to the groupings outlined above.
2. Teachers handling a group of studies will make frequent use of the project lesson. Sometimes two teachers handling the same group will work out and apply a project lesson between them.
3. In like manner academic teachers and teachers of industrial, commercial, or home economics work will work out and apply job sheet lessons.
4. The unit lesson, the project lesson, and the job sheet lesson may all be used on the same day and in varying combinations. Thus a teacher may use a unit lesson in mathematics for twenty minutes, and may then devote twenty minutes to the related mathematics in a project lesson or job sheet lesson which is scheduled for the day.
5. Topics in civics and guidance are most likely to expand into project lessons. Industrial, commercial and home economics work are usually best handled by job sheet lessons. English, industrial geography, hygiene and mathematics are usually presented in unit lessons.

E. Courses of study

General statement. Courses of study should be suggestive rather than rigid. Unless the continuation school adapts itself to the needs of the individual pupil and to local conditions, it fails in its purpose.

1. *Specifications of Studies.* The studies which continuation school pupils should pursue naturally group themselves as follows:
 - a. Studies which add to the pupil's power in fundamental reading, writing, and arithmetic.
 - b. Studies which make the pupil derive information, think and plan definitely with regard to the present employment and the future employment.
 - c. Studies which have an obviously close relation to the practical projects in which the pupil engages.
 - d. Studies which direct attention to the social relations and the interdependence of all persons in the relations of production and of government.

- e. Studies which provide as definitely as possible for vocational try-out experience.
2. *List of Studies.* Herewith is given a list of such studies and an approximate allotment of time for them.
 - a. General Classes

English, Vocational Guidance and Occupational Analysis,	
Current Events:	2 hours
Industrial Geography, Citizenship, Hygiene, Music and Recreation:	2 hours
Arithmetic, Drawing:	2 hours
General Science or Industrial Arts and Home Projects:	1½ hours
Reading for Appreciation:	½ hour
 - b. Prevocational Classes

English, Vocational Guidance and Occupational Analysis,	
Current Events:	2 hours
Industrial Geography, Citizenship, (Social Science) Hygiene, Music and Recreation:	2 hours
Related Arithmetic and Drawing:	2 hours
Commercial, Home Economics or Industrial Prevocational Work:	2 hours
 - c. Vocational Classes

English, Social Science, Industrial Geography:	2 hours
Related Arithmetic, Drawing, Hygiene:	2 hours
Commercial, Home Economics or Industrial Vocational Work:	4 hours

F. The relation of selection to content of instruction.

1. The problem in the continuation school is:—
 - a. To select from the large amount of material available:—
That which is best suited to the capacity and temperament of continuation school pupils.
That which can be taught in eight hours each week.
 - b. To present it by a method likely to succeed with continuation school pupils, that is, by unit lessons, project lessons, or job sheet lessons.
2. Any of the academic studies such as English, arithmetic, etc., presents these possibilities,—
 - a. It can be related to a general real life situation such as is the basis of any well planned unit lesson.
 - b. It can be related to a particular topic such as is the object of study in a project lesson or a job sheet lesson.

- c. It is worth while of itself, that is, it has a general improvement value. But the average continuation school pupil has turned away from general improvement values in education and responds best when these values are merged or motivated into real life situations or particular topics.
 - d. Accordingly in selecting material for a course of study in an academic subject it is advisable to consider which material is best adapted to be used for unit lessons and which for the other types of lessons.
3. Any of the shop studies such as industrial, commercial, or home economics work presents these possibilities—
- a. It serves a vocational purpose in that it gives a certain amount of manipulative skill and of utilitarian experience and information.
 - b. It serves a social purpose in that it helps the pupils to make a wise choice of vocation, trains in the duties of industrial citizenship, and, in the case of home economics for girls, trains for home making.
 - c. In the selection of material for instruction both these possibilities should be borne in mind.

G. The relation of grade school courses to content of instruction. It is essential for the continuation school teacher to know the content of instruction given in the general courses of study for grades five and six. This knowledge helps the teacher to set a reasonable standard as to what the pupils have been taught and suggests material for making up deficiencies in their power. In addition the continuation school teacher should make a careful study of the courses of study for grades seven, eight, and nine, in order to select material and methods suited to the needs of the continuation school pupils.

Caution, however, must always be exercised, to guarantee that the teacher makes a selection thoughtfully based on accurate knowledge of the needs of the individual or group. This caution is necessary because the content and method needed in courses of study for working children differ in so many respects from those designed for the grades.

H. Sources of material. A bibliography on methods and sources of instruction material in each subject is placed at the end of each section which follows. One copy of each of five or six books of the kind suggested in the bibliographies should be supplied for each subject which an instructor teaches.

From these books the teacher gets suggestions on content and methods as well as considerable actual instruction material. The teacher translates the suggestions into terms of local conditions and uses the resulting material for instruction. Further the teacher, starting with a topic so suggested, gets information from interviews with employers, foremen, other teachers, librarians, and secretaries of organizations; from local business forms, trade magazines, etc.; and converts this information into material for instruction.

The following outlines of courses are designed, not to indicate a minimum accomplishment, but to suggest an abundance of content from which selection may be made.

IV. CIVICS

A. *Aims*

Training in citizenship is the most important single function of the continuation school. Not only should there be a definite assignment of time to the study of civics, but at every point of contact which the pupil has with the school, good citizenship should be emphasized.

Courses and lessons should be planned not so much to give the pupil information on the machinery by which government is administered, as to make him think and act properly in the relations which affect him as a young worker and as a youthful member of his community.

Training in citizenship also implies training in the proper and profitable use of leisure, in recreation which is at the same time healthful and helpful. The school assembly hall, the school gymnasium, public parks and playgrounds all are effective in helping to make good citizens.

These children are in the transition period of life. They are rapidly passing from childhood to youth. Habits and character are crystallizing. Their leaving school to go to work is in the nature of a revolt and they are in danger of making their adjustments to life without parental, religious or other social guidance or control. The aim of civics teaching is action rather than knowledge, the measure of its success is the extent to which it actually functions in the lives of the pupils. The teacher must frequently suggest or even provide ways by which the pupils may live their civics.

B. *Content*

The question of content is largely one of selection from the abundance provided in the sixth, seventh, eighth and ninth grade courses in occupational civics, community civics, vocational civics, and economic civics. Less than forty topics can be covered in a year. In all courses there should be emphasis on community civics. The following is offered as a basis for selection:

1. For groups of pupils entering from schools where the sixth grade course was not given, many topics should be selected from the grade course in occupational civics.

For the usual group many topics should be drawn from the course in vocational civics.

For more advanced pupils, especially those who have already had one year in the continuation school, topics should be drawn from the course in economic civics, or from material sometimes included under the head of social science.

2. In selecting topics for unit lessons begin with the pupil and work out through the home, the job, the community, to the state and nation. That is, topics in personal citizenship should come first, and those on the machinery of government should come last and be reduced to a minimum.

C. Outline of a General Course

1. Training for community citizenship

The pupil in relation to himself:—Good government begins with self, self control, vices and virtues of youth, advantages of good habits, good companionship, of good surroundings, of doing right, of thrift, honesty, cleanliness, health, cheerfulness, avocations, of further education.

The pupil in relation to his family:—The family the unit of society, authority and duty of parents, their right to obedience, helpfulness, partial support. Specific duties of children. Relation of school to home.

The pupil in relation to his community:—Social service, duties towards neighbors, civic pride, civic beauty, city planning, civic health, definition and duties of citizenship, protection of life and property, street department, public safety, parks, public recreation, local taxes, lights, public buildings, transportation, water supply, civic organizations, community history, local election machinery.

2. Training for industrial citizenship

The pupil in relation to his employer:—His duties, personal qualities essential to success, his rights, the Child Labor Law.

The pupil in relation to his job:—Requirements of the present job, the future job, relations to fellow employees, co-operation, fair play, need and opportunities for self improvement, analysis of many occupations, local opportunities. Note especially the ninth grade course in vocational civics.

3. Training for state and national citizenship

The pupil in relation to his state and country:—What citizenship means, advantages, duties, immigration, the national departments, patriotism, service, and tolerance as essentials in democracy.

D. *Methods*

A most effective aid in giving instruction in civics is to bring the pupils together in an assembly where they can be addressed by good speakers who have intimate knowledge of commercial, industrial and civic conditions. There should be co-operation with local organizations or movements like Boy Scouts, Girl Scouts, school savings systems.

A form of pupil class organization or student self government, wisely adjusted to the needs of the particular group, is effective. Codes of manners and conduct worked out in class by the pupils themselves are more effective than rules, regulations, and advice coming only from the teacher.

At reasonable intervals social evenings, public exhibitions of work done, participation in public school athletic contests, field days, are essential. Teachers should be alert to combat any feeling on the part of other sections of the school system or of the continuation school pupils themselves that these pupils are regarded as different or inferior to other public school pupils.

E. *Suggestive Lessons*

1. Lesson: Thrift.

Aim: To develop the habit of thrift.

Approach: What is thrift?

A Pennsylvania school girl won the prize offered by the American Society for Thrift in 1913. The definition was: "Thrift is management of your affairs in such a manner that value of possessions is constantly increasing." Note that thrift includes wise spending as well as saving.

Development:—What does it mean to manage your affairs?

Do we save food?

Do we save clothing?

Do we save time?

Do we save health?

Do we save money?

Compare thrift and waste.

At the bottom of all great careers is "Thrift."

Select examples from history.

Select some one whom the class knows, who is being successful because of thrift in time, energy, etc. Use him for a class example.

Opportunities to practice thrift:

Liberty bonds and war saving stamps.

Small savings accounts.

Building and Loan Associations.

Christmas and vacation saving funds.

Reaction:—Have children work up outlines of short talks on thrift.

This correlates readily with English. Devise and maintain on the blackboard a graph showing amount and growth of systematic saving in the class.

Reference—Pritchard and Turkington—Stories of Thrift

2. Unit Course—How our Borough is Governed

Lesson:—Laying out of streets

Approach:—Mention a detour established in paving a street.

Development:—How is a new road or street made for a borough?

May this be petitioned for by the citizens?

What are viewers?

What is meant by damages?

How would citizens get a certain part of a street paved?

How is pavement paid for?

If they do not pay, how is it collected?

Must a church pay for its pavement?

If a borough notifies a man to pave and he doesn't do it, what happens?

Is there an ordinance requiring a person to keep snow and ice off his walk?

3. Lesson:—How citizens can help the fire department

Approach:—An ounce of prevention is worth a pound of cure.

Development:—Bonfires; fireworks; care of matches; care of open gas flames; inflammable liquids like gasoline, kerosene, alcohol; spontaneous combustion from oiled rags or overalls; rubbish in the cellar; fire escapes; how to ring in a fire alarm; use of emergency telephone call; proper conduct at a fire.

Reaction:—Begin in the school and investigate for locked doors, doors not opening outward, rubbish in closets under stairways or in basement. Carry the investigation home and have pupils report improvements made.

Topics for similar lessons and short unit courses will be suggested by the study of the civics courses for the sixth, seventh, eighth and ninth grades. Every topic should be selected with reference to its application to local conditions. Do not try to teach too much in one lesson. Consider the civics lessons as giving forty opportunities in the year to influence the life of a boy or girl, and select the forty topics which seem best adapted to function helpfully in their lives this year.

F. Bibliography

Allen—Civics & Health—Ginn

Doughton—Preparing for the World's Work—Scribner

- Dunn*—Community Civics—Heath
Dunn—The Community & the Citizen—Heath
Finch—Every Day Civics—Amer. Bk.
Giles—Vocational Civics—Macmillan
Godfry—Health of City—Houghton
Guittéau—Preparing for Citizenship—Houghton
Higby—Civics-Penna. and the Nation—Heath
Hill—Teaching of Civics—Houghton
Hughes—Community Civics—Allyn
Hughes—Economic Civics—Allyn
Hunter & Whitman—Civic Science in the Home—Amer. Bk.
Leavitt & Brown—Elementary Social Science—Macmillan
Maltby—Elements of Civics for Penna.—Amer. Bk.
Nida—City, State & Nation—Macmillan
Pennypacker—Penna. the Keystone State—Christopher Sower Co., Phila-
 delphia.
Pritchard & Turkington—Stories of Thrift—Scribner
Thomas—History of Pennsylvania—Heath
Turkington—My Country—Ginn
Yerkes & Lefferts—Our City—Lippincott
Ziegler & Jaquette—Our Community—Winston



V. GUIDANCE

In the continuation school the guidance work of the entire school system comes to a test. Not only are the aims, content and methods, which are outlined in the State Department's general bulletin on guidance, factors in the continuation school, but in addition the background of employment and the need for wise placement and for preparation for the next job intensify the importance of guidance. Points in teacher training are involved because good guidance work in the continuation school requires that the teachers be well informed about employment conditions of juvenile workers. Points in school organization and administration are involved, because effective guidance work is dependent upon prevocational work, co-ordinating work, placement and the follow-up work of the teachers. These are largely a matter of assigned program and administration. These matters are discussed in detail in the bulletin on the organization and administration of continuation schools.

A. *Aims*

1. To help the pupil to make a plan of life, within reach of his abilities, and worth while.
2. To assist him in carrying out that plan by guiding him to the opportunities for further education and for prevocational experience in the continuation school, in the evening school, in correspondence courses, business colleges, etc.
3. To help him find congenial and stimulating employment.
4. To direct his attention and procure reactions in the fields of health, thrift, ethical conduct and worthy use of leisure.

B. *Content*

1. There is guidance material in the content of every study. That the guidance value appears casually in the progress of the lesson often makes its appeal stronger than if it were introduced as the chief aim of that bit of instruction. For instance the subject is English and the topic of discussion is Proper Conduct in a Trolley Car. The result of the lesson so far as English is concerned is a well written exercise. But an equally important result is that the English lesson has been used as a means for driving home an important lesson in ethical guidance. Or, the problem in arithmetic states that in the factory where Mary works at the wage rate of 20 cents per hour there is a rule that an employee who is more than five minutes late shall be docked 15 cents. What is Mary's usual weekly wage? How much

did she find in her pay envelope at the end of the week wherein she was ten minutes late on Wednesday? The class not only solves a problem in arithmetic but also has its attention quietly directed to the value of being on time. A careful inspection of the suggestive lessons under English, arithmetic, civics, etc., will reveal the fact that a point in guidance is brought out in almost every one of them.

2. All the school activities, such as the assembly, the school paper, the orchestra, debating clubs, athletic contests, supervised play, even the way in which pupils conduct themselves in the corridors, have a content of guidance.

3. The time definitely assigned to guidance on the school program can be most profitably used,—

- a. For the group, in the study of topics arising from real situations in the home, the school, and employment.
- b. For the group, in a systematic study of occupations.
- c. For individuals, in counsel with the teacher on personal problems.

4. The ninth grade course in vocational civics contains much guidance material which in content and method is excellent for continuation school work. Such material should be selected.

5. Guidance is an individual and a local problem. Therefore any suggested plan of procedure or outline of study should be revised and adapted to local conditions.

C. Method

1. The small amount of time available in the continuation school as well as the motivating power of the subject makes it advisable to use guidance material in connection with other studies. Thus some English lessons or parts of lessons, will have as their chief aim the imparting of definite skill or definite appreciation in English, but in many other lessons the material for oral or for written English will be from guidance sources. In like manner health guidance will tie up with the study of hygiene and before the day is ended both subjects will be the basis of an English lesson. Thrift guidance involves figuring and so leads into arithmetic, but the topic may originate in a civics lesson on making a budget, in a home economics lesson on the purchase of foods, or in a woodworking shop where the wasteful sawing of lumber is noticed.

2. The method in study of occupations is to use the outline of analysis as a basis for oral and written English. It is advisable to assign this work two or three weeks in advance, and to have several pupils share the task of getting information on the different items. The need of tact and discretion in obtaining some of the information on local industries is obvious.

3. To think in terms of the aim, content, and method for guidance work is not enough. Here is the living human element of the continuation school. Unless guidance permeates every phase of continuation school work, the school fails to meet its opportunity. The kind of employment which is open to the juvenile worker is aptly termed the blind-alley job. Our American technique of commerce and industry makes such jobs inevitable. But when a child working on such a job receives the stimulus of the right kind of vocational guidance in the continuation school, you get this result: there is opportunity in every job providing the young worker applies to that job the best that is in him. Experience on the job itself is of little value. Guidance in the school apart from the job is of little value. But when the job is combined with the school and guidance is administered; when attached to the blind-alley job you have an open-eyed youngster with a problem and a plan, you have knocked the end out of the blind-alley job. Out of motivated school work comes motivated life and there is no blind alley where there is motive. The home, the school, the employer, and the child are all working together. The result of such work gives those things which are the aim of guidance. In the child are developed manipulative skill, intelligence on things in general and on the job in particular, the habits and virtues which constitute character; and the result is wise guidance both for vocation and for avocation. It is really possible to attain that condition which should be adopted as a slogan in the school: "Guidance every hour of every day for every child."

D. Suggestive Lessons

1. See under Civics, the lesson on Thrift; under Mathematics, Marketing Problem; under English, The Newspaper; under Lesson Planning, the Related Guidance on the Job Sheet Lesson.

2. The following are examples of unit lessons for the group on situations arising in school, at home, and in employment.

Lesson:—Is your record good?

Approach:—John Doe was in this class four years ago. Here is a blank I just received from a bonding company. Probably each of his former employers received one of these blanks. We fill them out on the basis of what John did when we knew him. His conduct and character of four years ago help to determine whether he gets this desirable position.

Development:—Have pupils study carefully and check themselves against the items in the printed forms used by several local employers and bonding companies. These items are not a text for abstract discussion of desirable qualities. These are the impersonal, inevitable commonplace test of the business world.

Reaction:—Post the forms on the bulletin board from time to time and tell the pupils to measure themselves.

Lesson:—What is meant by succeeding in life?

- a. What part does the vocation have in making a success of life?
- b. What part does citizenship play?
- c. Does a home make any difference in life?
- d. What about health?
- e. What part does leisure play?
- f. Does the ability to enjoy things that are beautiful in art, literature, and music contribute to our success in life?
- g. What about moral character?

Lesson:—My future vocation.

- a. What part does work play in the world?
- b. A vocation of some kind is inevitable for practically all of us. What people are not obliged to work—what lives do they lead?
- c. There are two methods of approach to the time of going to work:
 - (1) Drifting to it.
 - (2) Preparing for it in every way possible.
- d. People are better fitted for some kind of work than for others.
- e. It is important to get acquainted with as many kinds of work as possible.
- f. School is an important preparation for a vocation.
 - (1) Admittance into employment is made easier.
 - (2) Habits of study—studying the job—are a very valuable asset after getting into the employment. Especially is this true if promotion is desired.

Twenty suggested topics like the foregoing have been expanded into lessons and can be obtained in mimeographed form from the Department of Public Instruction. The other topics cover such items as: I am a citizen. My home. My time out of school. How the school can help me in my future vocation, in home and community, in health, in leisure hours, in appreciation of the beautiful in art, literature, and music. What the home means to the pupil, the community, state and nation. The father in the home, the mother, my part. General study of the field of occupations and my choice of vocation.

E. *Study of Occupations*

1. *Suggested outline for study of an occupation.*

Name of occupation

Size and importance in this locality; increasing or decreasing;
stable or fluctuating; steady or seasonal; hours of labor per

day, per week; overtime, amount of idle time per year.

Conditions of labor for light, heat, ventilation; wash and rest rooms; danger from machinery, dust, or gases; moral conditions; is the work stimulating or deadening?

Does the work require skilled, semi-skilled or unskilled labor, is it chiefly manual or mental; does it require special physical ability, as strength, height, quickness, keen vision; special previous experience, education, or personal qualities?

What are the opportunities for service; for initial pay; for later pay and promotion; for other compensation as bonus, pension, or vacation; for getting further training in public schools, apprentice schools, or by other institutions?

2. *Lists of occupations*

Suggestive lists of occupations to be studied are given in many of the books named in the bibliography, but these should be only suggestive. They are helpful for classifying local occupations for purposes of study. The pupils themselves, in their own occupations and those of their adult relatives and friends, represent most of the occupations which should be studied.

3. *One method of rating an occupation*

Present the following as a lesson in guidance. After the pupils have learned the method let them apply it as seems wise to the occupations which they study.

Approach:—By using simple fractions the teacher reviews the law of fractions: increasing the numerator while the denominator is unchanged increases the value of the fraction; increasing the denominator with numerator unchanged decreases the value of the fraction.

Development:—To compare one occupation to another occupation does not prove that one is better than another for *me*. The two things that count are

a. What qualities do I have?

b. What qualities does the job require?

The value of any job for me = $\frac{\text{Qualities I have or can acquire}}{\text{Qualities required by the job}}$

Value of job No. 1 = $\frac{\text{I have 3 qualities}}{\text{The job requires 9 qualities}} = \frac{3}{9} = \frac{1}{3}$

I am only $1/3$ good enough for that job. I can't hold it until I get those other qualities.

Value of job No. 2 = $\frac{\text{I have 8 qualities}}{\text{The job requires 4 qualities}} = \frac{8}{4} = 2$

I am twice as good as this job. I will try to get a bigger job than this one.

$$\text{Value of job No. 3} = \frac{\text{The job requires 8 qualities}}{\text{I have 8 qualities}} = \frac{8}{8} = 1$$

This is the perfect job for me. I am suited to the job and the job is suited to me.

$$\text{Value of job No. 4} = \frac{\text{I have 2 qualities}}{\text{The job requires 2 qualities}} = 1$$

Figures tell the truth. This is the job for me. But with only two qualities, I am pretty poor and so is the job.

$$\text{Value of job No. 5} = \frac{\text{I have 20 qualities}}{\text{The job requires 18 qualities}} = \frac{10}{9}$$

This is a fine job for me. The value is close to unity and the number of qualities is large.

Do not try to prove too much by this method. Neither the logic nor the mathematics involved should be pressed too far. But it does provide a graphic device by which each pupil is led to think more definitely in analyzing an occupation, and, what is very important, is led to analyze himself at the same time.

F. Bibliography

- Allen*—Business Employments—Ginn
Allen—Studies of Occupations—Harvard Univ. Press
Allen—A Guide to the Study of Occupations (a bibliography)—Harvard Univ. Press
Bloomfield—Readings in Vocational Guidance—Ginn
Bloomfield—Vocational Guidance of Youth—Houghton
Brewer—The Vocational Guidance Movement—Macmillan
Center—The Worker and His Work—Lippincott
Davis—Vocational and Moral Guidance—Ginn
Dean—The Worker and the State—Century
Dean of Girls-Chicago—Manners and Conduct—Allyn
Gowin & Wheatley—Occupations—Ginn
Hoele & Salzburg—The Girl and the Job—Holt
Jackson & Others—Opportunities for Boys and Girls—Century
Laselle & Wiley—Vocations for Girls—Houghton
Leavitt—Examples of Industrial Education—Ginn
Leavitt & Brown—Prevocational Education in the Public Schools—Houghton
McKeerker—The Industrial Training of the Boy—Macmillan
McKinney—Success through Vocational Guidance—Amer. School
Parton—Captains of Industry—Houghton
Reed—Junior Wage Earners—Macmillan
Taylor—A Handbook of Vocational Education—Macmillan
Weaver—Profitable Vocations for Girls—Barnes
Weaver & Byler—Profitable Vocations for Boys—Barnes

VI. ENGLISH

Every continuation school teacher should read carefully and frequently in the Course of Study in English for the upper six grades, all the material in Parts I and II, and the work for the seventh, eighth, and ninth years in Part III.

A. *General Aims*

1. To help the pupil understand what he learns and reads.
2. To help him to express himself.
3. To use his training in oral and written English effectively for the purposes of business, with satisfaction for the purposes of leisure and recreation.

B. *Special Phases of Instruction*

1. In the period devoted to English as a special subject,—
 - a. Fundamental review and drill should form a short part of each day's work.
 - b. The emphasis should be on English for everyday use.
 - c. Some time should be devoted to English related to other phases of school work.
2. Since English is an incident in all instruction each teacher has a duty in developing power in English.
 - a. Power in silent reading means power to acquire knowledge and to think clearly in such subjects as arithmetic, geography, etc.
 - b. Correct oral and written English are essentials in every recitation.

C. *Points of special Emphasis*

1. At all times set as a standard the fact that simple English is best.
2. Usually oral drill should precede written work.
3. Much of the work should be based on the everyday experience of the pupils.
4. Above all, the English recitation should be inspiring and interesting. Although the work is elementary, it should introduce the children to the possibilities of appreciating good literature and good speaking. Typical devices for obtaining this standard are, the animated discussion of current events, the study and interpretation of a clever cartoon, discussion which leads to the uncompelled memorizing of a pithy proverb, epigram, or a few lines of a good poem.

D. *Suggestions on Material*1. *Subject matter for Unit Lessons*

(a) *Spelling.* Select words in common use. Do not use formal lesson books. Each day present a few new words which are or should be a part of the pupil's ordinary vocabulary. Give instruction on the meaning and correct use of all words studied. Suggestions for such lists follow:

<i>Stockroom</i>	<i>Overall Factory</i>	<i>Office</i>
type	pattern	typewriter
perfumes	hemming	business
handkerchief	felling	ledger
boudoir	jacket	policies
jewelry	treadle	legible

Similar lists can be selected from the office, railroad, trolley, home, street, lunch room, various trades, names of streets, names of people, names of towns, etc. Such lists should grow naturally out of topics assigned for oral or written composition. The pupils should have a large share in compiling them.

Select from the pupils' oral and written vocabulary words which are commonly misspelled, such as, until, all\right, already, where, using, salary, February.

A sufficient supply of pupils' dictionaries should be provided. Definite lessons should be given in the use of the dictionary, including the more common diacritical marks. Cultivate the dictionary habit.

(b) *Reading.* The teacher may need to use books which appeal to the present taste and ability of pupils in order to develop an interest in good literature. Make a start somewhere, and teach the pupils to read for themselves.

The occasional reading of a poem on a theme that appeals to young people serves as an interesting variation of the work in reading.

In the reading period the efforts of the teacher should be directed toward securing interest and enjoyment. Difficult words and expressions should be explained in passing, if necessary.

The teacher should do a part of the reading. By this means she can add interest to the more difficult and less interesting passages. She can keep a high standard of reading before the pupils.

It is sometimes a good plan to read aloud the first part of a story or the first few chapters of a book and then lay the story or book aside with the comment: "You may finish that later if you like it."

Pupils should be trained in silent reading. As most of the reading done outside of school is silent, training along this line is very necessary. Selections for this purpose should be interesting and full of

appeal. Such silent reading should be followed by class discussion to make sure that the pupils have caught the thought of the selection. At other times they should read for pleasure, the only query raised by the teacher being a cheerful "Did you like it?"

The public library should be utilized as much as possible. Go with the boys and girls to the library, show them how to obtain books, explain the card index, locate magazines and books interesting to them.

Trade magazines, trade papers, biography, standard fiction and current events magazines appeal to these pupils. Local employers are frequently able to furnish copies of magazines. Suggestive lists of books for the school library are available upon application to the Department of Public Instruction.

(c) Grammar. Avoid formal lessons. Teach grammar incidentally in connection with oral and written composition.

If the teacher discovers that children are using "was" for "were" or "were" for "was," then a short drill exercise should be given as a part of the English work for the day. If the pupils are not capitalizing correctly, then an exercise in capitalization is in order. Do not ask these pupils to memorize rules for capitalization, or punctuation. Any modern "business English" text book contains exercises good for drill in this field.

Cards with such expression as "It is I," "I saw him," posted in the room, help to correct common errors. In one school a "Society for the Prevention of Cruelty to English" has accomplished a great deal of speech improvement without resorting to formal rules of grammar.

(d) Oral composition. Lay much stress on oral English. Important items are courtesy and clearness of tone, good enunciation, correct poise, clearness, conciseness, and accuracy of expression. Pupils should be encouraged to stand before their classmates and talk on familiar subjects in simple sincere words. Every recitation furnishes opportunity for such drill. Debating, current events discussions, simple parliamentary procedure in a live class organization, "make believe" personal application for employment, telephone conversations, also give drill in oral English.

(e) Written composition. The aim is to train pupils to place their thoughts upon paper in an intelligible and readable form.

Whenever possible, have the class develop an outline of the exercise on the blackboard before beginning to put their thoughts on paper. Supervise while the pupils are writing, mentioning in quiet way places for improvement in punctuation, spelling and grammar.

All written work should be corrected by the teacher. Constructive criticism should be written on each page, and the teacher and pupil, whenever advisable, should talk over the corrected copy. Read the best papers to the class and exhibit the neatest.

Letter writing should be the chief form of written composition in continuation schools because the greatest part of the written work of these pupils, outside the school room, takes the form of letters. These exercises ought to embrace social and business letters, including letters of application and introduction, orders, and answers to "want ads."

Writing telegrams for development of accuracy and conciseness is a good exercise.

Every continuation school teacher should make a collection of actual business forms which are in use in the community. These can be used as a basis for lessons.

Dictation must not be neglected. Recent civil service examinations have shown that even adults cannot take simple dictation accurately, nor can they copy accurately. Short drills in dictation and copying will help vary the English lesson.

2. *Subject matter for Project Lessons and Job Sheet Lessons*

(a) Spelling. Direct attention to trade terms or technical words used in the development of the lesson.

(b) Reading. Train the pupils to use as reference books volumes from the school library or the public library, supplemental text books and trade magazines. Use pictures and articles giving information on the history or development of the topic under discussion. Capitalize the inherent liking of pupils of this age for biography by studying the lives of the men involved. The automobile suggests Henry Ford; the incandescent lamp, Edison; modern lubricants, Acheson; the sewing machine, Howe; the printing trade, Gutenberg, Franklin, and Edward Bok; chrome tanned leather, Robert Foerderer. Pursue the theme of the romance of modern industry, following clues furnished by employers.

(c) Oral English. The material suggested above will supply ideas and information which are the two essentials for profitable oral work.

(d) Written English. Avoid compositions. Have the pupils write a real letter, order a set of tools from catalog specifications, fill out a factory or business form, devise and rule a record form.

E. *Standards and Measurements of Attainment*

Just as instruction should be directed to improve individuals, so must the success of each pupil be measured by his individual improvement rather than by a group standard.

F. *Suggestive Lessons*

Lesson: Telegrams

Aim: To teach how to write a telegram; when, where and how to send it.

Approach: (To be supplied by the teacher).

Development: Discuss the use of telegrams, and cablegrams.

Comparative cost of each.

Write several paragraphs on the board, have the class condense these into ten word telegrams.

Have the class imagine that there has been an accident, and that they are to send telegrams to their parents assuring them of their safety.

Secure blanks for this purpose and write actual telegrams.

Lesson: Correct usage.

Aim: To emphasize usage of verbs.

Approach: (To be supplied by the teacher).

Development: Confine this lesson to verbs commonly misused; for example, lie, lay, laid; sit, set; teach, learn; rise, raise. Lie is intransitive; lay is transitive; lie means to rest; lay means to place.

Insert the correct forms in the following:

I—the book on the table.

I have—the letters on your desk.

He let his tools—in the rain.

They told me to—down.

I—down for about two hours.

Note: (Develop others in similar manner).

Lesson: The Newspaper

Aim: To teach the children the value of the newspaper.

Approach: (To be supplied by the teacher).

Development: Choose the best local newspaper or a reliable city paper for the study of this lesson.

General characteristics of newspapers:

Most important news, domestic and foreign.

Local news.

Editorials.

Sports.

Financial page.

Special columns.

Advertising.

Reason for reading newspaper:

To keep ourselves well informed.

What to read:

The careful reader will focus his attention upon items which are of social, economic, and political importance.

How news is gathered.

Newspaper style.

For examples of related English in Project Lessons and Job Sheet Lessons see pages 13, 14, 15.

G. Equipment

1. A supply of pupils' dictionaries sufficient to provide one for each member of the class.
2. Real letter paper for personal letters and business letters.
3. A hektograph or other means for furnishing drill exercises for each member of the class.
4. Enough subscribed copies of a magazine giving a weekly digest of news to furnish material for the study of current events.

H. Bibliography

Bolenius—Teaching Oral English—Lippincott
Bolenius—Every Day English—Lippincott
Bowlin-Marsh—Vocational English—Scott Foresman
Briggs and others—Junior High School English—Ginn
Buhlig—Business English—Heath
Cook—A Project Book in Business English—American Book
Davis—Practical Exercises in English—Ginn
Davis & Lingham—Business English and Correspondence—Ginn
Hotchkiss & Drew—Business English—American Book
Lewis & Hosie—Practical Business English—American Book
Webster—English for Business—Newson & Co.
Wilcox—Daily English Lessons—Lippincott

1. Suggested List for a Library—General reading

Bond—American boy's engineering—Lippincott
Bond—With the men who do things—Munn
Burns—Stories of great inventions—Harper
Bullivant—Every boy's book of hobbies—Dodge
Center—The worker and his work—Lippincott
Collins—The wireless man—Century
Corbin—Mechanical inventions of today—Lippincott
Crumph—Boys' book of firemen—Dodd
Crumph—Boys' book of mounted police—Dodd
Crumph—Boys' book of policemen—Dodd
Gowin & Wheatley—Occupations—Ginn
Hoerle & Saltzberg—The girl and the job—Holt
Hunter & Whitman—Civic science in the home—American Bk.

Laselle & Wiley—Vocations for girls—Houghton
Leigh—The human side of retail selling—Appleton
McCarthy—Health and efficiency—Holt
Parton—Captains of industry—Houghton
Pressey—A vocational reader—Rand McNally
Pritchard & Turkington—Stories of thrift—Scribner
Smith—Story of iron and steel—Appleton
Parkman—Conquests of invention—Century
Frazer—Work-a-day heroes—Crowell

Recreational reading

Aleott—Little women
Allen—The Pineboro quartette—Page
Antin—The promised land
Black—Captain Kodak—Lothrop
Bok—A Dutch boy fifty years after
Bond—Pick, shovel and pluck—Munn
Borup—A tenderfoot with Peary—Stokes
Byrant—Christopher Hibbault, roadmaker—Duffield
Canfield—Bent twig
Clemens—The prince and the pauper
Connor—The sky pilot
Dix—Merrylips
Doyle—Adventures of Sherlock Holmes—Harper
Dyer—Five Babbits of Bonneyacres
Ferber—Roast beef, medium—Stokes
Ford—Honorable Peter Sterling
Hagedorn—Boy's life of Theodore Roosevelt—Harper
Hale—The man without a country
Harris—Joe, the book farmer
Hasbrouck—Hall with doors—Woman's press
Heyliger—High Benton, the story of an average boy—Appleton
Johnston—To have and to hold—Grosset
Keller—Story of my life
Kipling—Captains courageous—Century
Lawson—The log of a timber cruiser—Duffield
Lee—Simeon Tetlow's shadow
McCarthy—If I were king—Grosset
Meadowcraft—Boy's life of Edison—Harper
Monroe—Derrick Sterling, a story of the mines
Montgomery—Anne of Green Gables—Page
Moses—Life of Louisa May Alcott
Norris—Mother—Grosset
Paine—Boys' life of Mark Twain—Harper
Parkman—Heroes of today—Century
Parkman—Heroines of service—Century
Rice—Mrs. Wiggs of the Cabbage patch—Century
Rinchart—Amazing interlude—Doran
Seegmiller—Emmeline
Simpson—Hidden treasures—Lippincott
Washington—Up from slavery—Houghton
Webster—Daddy Long-legs—Century
Weir—Anders, the young apprentice of the steel mills—Wilde & Co.
Wister—The Virginian—Grosset

VII. HYGIENE

A. *Aims*

1. The pupils must be trained to know the importance of their own good health to themselves, their families, their communities, the nation. This is the obvious relation between hygiene and citizenship training.

2. They must realize that unless they observe the laws of hygiene they can not have good health, physical comfort, attractive personal appearance or full earning ability.

3. There must be instruction on the methods and the importance of safety precautions for themselves and for others.

4. Specific action or improvement on the part of the individual pupil should be expected as evidence that the instruction is getting results.

B. *Content*

1. In the field of personal hygiene, a study of health habits under such topics as food, fresh air, sleep, lighting, temperature, posture, cleanliness, clothing, exercise, recreation, fatigue, alcohol, tuberculosis, worry, care in encountering or spreading infection, care of ordinary cuts and burns, the hygienic value of cheerfulness, courtesy and helpfulness.

2. In the field of community health conditions, such topics as water supply, garbage and sewage disposal, the fly problem, the mosquito problem, purity and refrigeration of foods, street cleaning, respect for quarantine, community or state legislation on public health.

3. In the field of employment relations and general safety, such topics as sanitary working conditions, fatigue and accidents, carelessness and accidents, machine safeguards, safety in street traffic and trolley traffic, proper lunches.

4. Where local conditions make it advisable a variant of the foregoing in the form of a unit course in First Aid.

5. The physiology content should be reduced to the minimum necessary to understand instruction from topics on the care of the eye, ear, teeth, hair, skin, and digestion.

6. Some of the content is selected because the special needs of the groups suggest topics, as, for girls, the care of hair, hands, nails; for the home economics group all the topics connected with sanitary housekeeping; for boys in industry, special safety precautions such

as avoiding flapping overalls, tacks or staples in the mouth, gas or dampness in place of work, open elevator shafts, letting hot solder touch water, touching milling machine shavings with the fingers, etc.; for girls in industry,—loose hair near belts, high heels on shoes, lifting in a strained position.

7. See also the general course in hygiene for the grades, especially Appendix E on accident prevention and Appendix M on suggestive lessons.

C. *Methods*

1. Topics of general value are presented to groups in unit lessons. Hygiene related to specific operations in industrial, commercial or home economics work is presented as planned for that lesson sheet.

2. Regular exercise in the classroom, proper regard for room ventilation, supervised play or games, vigilance for healthy posture are obvious methods.

3. Use newspaper, magazine, and current events articles, posters, pictures, slides, pamphlet material from life insurance companies, local health crusades, dental companies.

4. The use of slogans or designing of posters helps to convert instruction into action. These pupils need concrete illustration.

D. *Suggestive Lessons*

1. Lesson: Preparation for day's work.

Aim: To teach "How to start the Day."

Approach: When you go to work in the morning, how does your personal appearance compare with that of your boss?

Development:—Amount of sleep required.

Regular hour for rising.

A cold splash in face and chest, at least; then a brisk rub with a rough towel.

Attention to the toilet; thorough washing of hands.

Hair combed neatly.

Face, neck, ears, nose should be clean.

Teeth brushed.

Hands and nails should be clean and well cared for.

Clothes should be neat, no buttons missing.

An adequate breakfast.

Walk to work for the sake of the exercise.

Reference: Hygiene for the Worker, Chapter II.

2. Lesson: Clothing.

Aim: To teach the proper selection of clothing.

Approach: (To be supplied by the teacher.)

Development: One of the uses of clothing is to keep the body warm.

Clothes do not make heat. They prevent heat from leaving the body.
 How much to wear.
 Care of underclothes.
 Why should we keep our clothes brushed and pressed?
 Appropriate clothing for various occupations.
 Shoes.

Results of ill fitting shoes.

When buying clothes, consider durability, comfort, proper style, warmth, appropriateness, and economy.

Mental hygiene side, and business asset side, of neat and cheerful dressing.

Reference: Hygiene for the Worker, Chapters IV and XVIII

3. Lesson: Insects as pests.

Fly.

Where fly breeds; life history.

Means of control: Screens, traps, fly campaigns.

Mosquitoes.

Where found; life history

Specific diseases carried.

Means of control: Oiling of ponds, filling in drains, covering rain barrels, screens, mosquito campaign.

The work of the United States Government in Cuba in 1901; in New Orleans in 1905; in Panama.

E. *First Aid Instruction*

Teachers should follow the outline and use the methods issued by The American Red Cross in the Teachers' Handbook of First Aid Instruction.

In the continuation school all of the outline for the junior high school grades can be used, as well as a large part of the outline for senior high school grades.

The junior course covers these topics:—Bandages and dressings as used on hand, foot or head; transportation without a stretcher, with a stretcher; fainting; first aid contests; sunstroke; frost bite; bruises; strains; sprains; first aid box; team contests; examinations.

The senior course covers these topics:—Wounds without severe bleeding; with severe bleeding; fracture of the arm, leg, rib; team contests; poisoning; burns and scalds; suffocation and drowning; electric shock; gas poisoning; unconsciousness; examinations.

The syllabus on Hygiene for grades seven to ten contains a great deal of material from which selections can be made.

F. *Bibliography*

American Red Cross—Textbook on First Aid—Local Chap. A. R. C.
American Red Cross—Teachers' Handbook of First Aid Instruction—
 Blakiston

- Hunter and Whitman*—Civic Science in the Home—American Bk.
Pyle—Personal Hygiene—W. B. Saunders
Ayres, Wood & Williams—Healthful Schools—Houghton
Terman—Hygiene of the School Child—Houghton
Tolman—Hygiene for the Worker—Amer. Bk.
U. S. Bureau of Labor Statistics—Hygiene for the Painters Trade
Payne—Education in Health—Lyons & Carnahan
Gillett—Dietetics for High Schools—Macmillan
 Pennsylvania Department of Labor and Industry—Bulletins
 Pennsylvania Department of Health—Bulletins

VIII. INDUSTRIAL AND COMMERCIAL GEOGRAPHY

A. *Aim*

1. To give the pupil a background of knowledge concerning the materials and the economic conditions with which he comes in contact.
2. To develop ability in the interpretation of geographical material.
3. To help the pupil to realize the interdependence of individuals and of industries.

B. *Content*

1. The emphasis should be:—
 - a. On the effect of climate, surface, soil, raw materials, sources of power and means of transportation, in causing certain industries to be located where they are.
 - b. On the inter-play of social and economic forces resulting from these facts.
Only such locational geography bounding of states, locating of cities, naming of mountain ranges as definitely functions in this connection, is to be required.
2. Note the suggestions on content implied in the section on methods given later.
3. Organize the subject matter, but instead of following a textbook type of organization whereby, for instance, under the head of "Foods" consideration is given to many foods that many people eat, organize, under "Foods," subject matter which can be handled in a few topics for unit lessons like the following:—

The Family Milk Supply
Meats in Our Town
How We Get Sugar
4. Be sure to utilize illustrative specimens or pictures obtainable either in the school building, in the place of employment or elsewhere.
5. Sometimes it is good practice to encourage the pupils to suggest for study topics in which they are interested, even though the teacher may need to supplement these suggestions.

C. *Method*

1. Begin at the home community. The subject is vital to the pupil only as it touches his own life. His own community offers the field for the most significant lessons. The industrial and commercial geography of other places is important to him chiefly as his own com-

munity has contact with the others through the exchange of raw materials or of finished products. Nevertheless this method does not confine the field of study to the United States since raw materials or markets frequently involve foreign countries.

2. Vitalize the work by getting first-hand information concerning local industries.

3. The pupils of the continuation school have a fund of common knowledge which should be utilized. Their intimate knowledge of realities makes it much more important to teach the coal industry of Pennsylvania than the wonderful scenic beauty of Yellowstone Park. Often the lesson simply organizes what the pupils already know.

4. Use specimens showing commercial raw products and articles in various stages of manufacture, as cement, sugar, shoes. Work with pictures, original sketches, maps and graphs, articles and pamphlets. Stimulate the interest of the pupils by analysis or study of the concrete material rather than use it later as a means of illustration. Have the pupils read advertisements and send for the illustrative pamphlets so freely offered. The railroads, insurance companies, local chambers of commerce, manufacturers of widely advertised products issue much helpful instruction material. Have pupils consult maps of the United States and of the world as sources of information and use paper, blackboard, outline maps and graphs to express their information.

5. Have the class slowly build up a book on one of the dominant local industries, not a scrap book but an organized book. Suggested divisions of the book are, mounted specimens from the industry, pictures, original sketches, maps and graphs, charts and posters, outlines of written work, illustrated history of the industry.

6. Start a school collection, first on a suitable local product, enlisting the co-operation of employers. This has been done notably in pottery and in glassware. Then expand to cover other products.

7. In presenting a topic use the textbook chiefly when it will assist in solving a problem which has arisen in the oral discussion.

D. Type lessons

Lesson. Local industries

Aim: To classify the industries of the community in regard to importance.

Approach: Which are the most important industries in town?

Development: Names of industrial concerns and their products.

Raw materials used.

Sources of these raw materials—map.

Means and routes of transportation—map.

Process of manufacture. (This means rapid telling of the successive steps of manufacture.)

Distribution of the finished product.

Advantages of locality for manufacturing:

Access to raw materials

Labor

Power

Nearness to markets

Lesson: Map study of community.

Aim:—To be able to make a rough draft of the vicinity.

Approach:—If one were up in an aeroplane, how would your city look?

Development:—Draw map of home city and locate some or all of the following:

Railroads and trolley lines

Chief streets

Parks and public buildings

Main industrial concerns.

Schools and churches

Rivers, mountains, etc.

Residential districts

Lesson: Industrial history of community

Aim:—To explain why the various industries were located in this community.

Approach: If we admit that the prosperity of our city is due to its industrial prominence, is it not well to study the factors which made the industry possible?

Development: Early settlement: When? Why? By whom?

Growth of city.

First industries:

Reason for establishment

Development, or growth

Graphs

Important persons in the development of the city.

Interesting stories about the community.

National history that has affected the city.

The future growth of the city.

Lesson: Where is wheat produced?

Aim: To give some information on world geography. Many pupils who left school at the end of the sixth grade or soon thereafter have only a vague idea of foreign countries. They need some work based on a map of the world.

Approach: The stores have reduced the price of a loaf of bread from six cents to five. Here is a map of the world with steamship routes marked on it. What is the relation between a five cent loaf and these routes?

Development: What climate, soil and population are needed for the production of wheat?

Locate the important wheat growing districts.

Show by graphs their relative production.

Where are their markets?

Trace the water routes.

Discuss distances and quantities of shipments.

When is the Australian crop ready for market; the South American crop; the Canadian crop; the Russian crop?

Why are the dates so different?

What happens to the price of wheat in the United States if there is no Russian crop?

E. *Other lessons*

Similar lessons are planned on the sources, process of preparation, marketing and qualities of materials for personal use, as,—

What we wear—Clothing—as shoes, hats, suits, cotton, linen, wool, silk, etc.

What we eat—Food—as wheat, corn, rice, milk, meat, oranges, coffee, spices, etc.

How we live—Shelter—as lumber, cement, brick, coal, gas, etc.

In like manner other lessons are developed about materials handled by the pupils in employment, such as textiles, pottery, glass, leather, iron, steel, rubber, etc.

This suggests a study of the agencies of transportation, of distribution, of finance, and leads to a series of elementary lessons on such economic factors as large scale production, the factory system, work of women, work of children, labor unions, interdependence of city and country, of employer and employe, of capital and labor, of factory and market.

F. *Bibliography.*

Allen—Geographical and Industrial Studies—U. S.—Ginn

Bishop & Keller—Industry and Trade—Ginn

Bogart—Econ. History of U. S.—Longmans

Brigham—Commercial Geography—Ginn

Carpenter—How the World is Clothed—Amer. Bk.

Carpenter—How the World is Fed—Amer. Bk.

Carpenter—How the World is Housed—Amer. Bk.

Dryer—Elementary Economic Geography—Amer. Bk.

Fisher—Resources and Industries of the United States—Ginn

Gannett, Garrison—Commercial Geography—Amer. Bk.

Keller & Bishop—Commercial and Industrial Geography—Ginn

Morris—Commercial and Industrial Geography—Lippincott

Robinson—Commercial Geography—Rand

Smith—Commerce and Industry—Holt

Smith—Industrial and Commercial Geography—Holt

Story—Story of Iron and Steel—Appleton

Tappan—Industrial Readers—Houghton

Tarr & McMurry—New Geographies, with Pennsylvania Supplement

Tower—Story of Oil—Appleton

VanHise—Conservation of Natural Resources of United States—Macmillan

Other Sources of Material

Cabinet of Educational Collection of Commercial Raw Materials
furnished by the Commercial Museum of Philadelphia.

The World Visualized—System of Stereography and Stereoscopes,
Underwood & Underwood.

Reports and publications of the Departments of Labor and Industry,
Forestry, Geology, Public Service and Highways, Harrisburg,
Pennsylvania; The Interior Department, especially the U. S. Geo-
logical Survey and the Department of Agriculture, of the U. S.;
Smithsonian Institution, Washington, D. C.

Practically any company will be glad to furnish pamphlets or other
information in regard to the product in which the teacher and
class are particularly interested.

IX. MATHEMATICS

A. *Aims*

To instruct and drill in the fundamentals and to train in applying what is taught to everyday use in commerce, industry, community and home life. To train pupils in neatness, accuracy, and speed.

B. *Content*

The material consists of arithmetic and some use of formulas.

1. *Arithmetic*

- a. The four fundamental operations applied to integers and fractions, common and decimal.
- b. In working with fractions, the emphasis is always to be kept on simple fractions, such as: $\frac{1}{2}$, $\frac{2}{3}$, $\frac{1}{4}$, $\frac{3}{4}$, $\frac{1}{8}$, $\frac{3}{8}$, etc.
- c. The decimal equivalents of fractions most commonly used should be fixed in mind, and the process of reducing any fraction, decimal and per cent. Use graphs and diagrams, discuss tables of decimal equivalents of fractional parts of an inch. Give rapid drill in one-step operations for speed and accuracy. For instance:

$$0.20 \text{ of } 60 = ?$$

$$\frac{1}{5} \text{ of } 60 = ?$$

$$12 = \text{what decimal part of } 60?$$
- d. Simple short-cuts in multiplication and division.
- e. Tables of weights and measures in common use.
- f. Percentage: the equivalence of meaning of the symbols for fraction, decimal and per cent. Use graphs and diagrams to help visualize these equivalences.
- g. Applications of percentage with very simple and practical problems: interest, profit and loss, commission, trade discount, taxes.
- h. Graphic representation: bar and circle graphs and newspapers and magazines, and their interpretation. Graphs on production in the industries represented by the pupils.
- i. Mensuration restricted to simple perimeters, areas, and cubic contents.

2. *Formulas*

- a. Use the formulas constructed by the pupil as the outcome of his work in mensuration and arithmetic, as:

$D=r \cdot t$ (distance in terms of rate and time)

$A=b \cdot h$ (area of rectangle)

$A=\frac{1}{2} b \cdot h$ (area of triangle)

$V=b \cdot w \cdot h$ (volume rectangular solid)

$C=\pi d$ (length of circle; $\pi = \frac{22}{7}$)

$A=\pi r^2$ (area of circle; $\pi = \frac{22}{7}$)

$I=p \cdot r \cdot t$ (interest)

- b. The use in simple problems in mechanics of such formulas as are given in handbooks for electricians, machinists, etc., as $c = \frac{E}{R}$ for calculating electric current from electromotive force and resistance, $d = \frac{DN}{n}$ for calculating the diameter of a driven pulley from the number of revolutions per minute of both pulleys and the diameter of the driving pulley.

3. *Sources of material*

The teacher's desk should be supplied with five or six books of source material of the kind suggested in the bibliography at the end of this section. With such books the academic teacher can approach this work with confidence. There is no doubt as to the ability of the pupils to solve such problems, nor of the value of this work to the pupils. Teachers who have not had experience in using such material are likely to think that a mechanic's handbook implies something mysterious and difficult whereas it merely shows how to apply simple mathematics to ordinary practical problems. The transition from the use of such books as are suggested in the bibliography, to the use of material taken from the handbooks, is easily accomplished.

Similar applications in work for girls lead to the use of material derived from books on store practice and on home economics. Material in both these fields is listed at the end of the sections on commercial work and on home economics.

The use of such material naturally leads the teacher to consult with other teachers who give instruction in vocational subjects, and to seek suggestions from employers.

In choosing the material of instruction for any particular class, the specific needs of the individual and of the class as a whole must be carefully considered. Inasmuch as the work will all be done by the pupils in class, it is incumbent on the teacher to have all material well in hand at the beginning of each class-period, in order to get to work immediately.

C. *Methods*

Avoid monotony in drill on the mechanics of operation. The principles involved should be taught by application to concrete problems which will be met in real life. Short, snappy periods of drill at the beginning of the period are best.

Single lessons covering one type of operation are advisable at times, but most of the lessons should include work on several operations. This affords opportunity for the teacher to discover individual needs for special attention.

Both method and content must vary in recognition of the varying needs and interests of boys' classes and of girls' classes; of industrial, commercial, and home economics groups; of groups or of individuals of high, medium, or low ability.

The teacher should so prepare his lesson plan for each class-period that he is independent of the textbook. No one feature of the teacher's work helps so much as this in securing and holding interest.

The best evidence of success is to have the pupils bring into class the problems that arise in their daily life, or to have an individual pupil ask for instruction in fundamental operations in which that pupil has already experienced a sense of deficiency.

The problems which continuation school pupils meet in daily life are not difficult of understanding or of solution. Usually if the problem can be worked at all, it is worked quickly and correctly. Therefore a part of the method of teaching consists of using problems so constructed that the pupils can solve them rapidly. This method which gives the pupils the satisfaction that comes from accomplishment is better than one which leaves them with the feeling that they have exerted themselves in vain against a too difficult task.

D. *Suggestive Problems*

Never construct from a real situation a problem which is itself not true to the situation. For instance:—

1. If you cut off $6\frac{1}{4}\%$ of a board 16 feet long, how many feet will remain?
2. A boy cut off $8\frac{1}{3}\%$ from his 24 foot fish pole. How long is it now?
3. A man bought 12 tons of coal and used $83\frac{1}{3}\%$ during the winter. How many tons did he use?

Each of the above problems is false, although the situation is true. Normal people do not think in terms of percentage in such situations, they think in terms of simple subtraction. The real problem involved in each of the above situations is as follows:

1. If you cut $3\frac{1}{2}$ feet from a board 16 feet long, how many feet will remain?
2. A boy cut off 8 feet from his 24 foot fish pole. How long is it now?
3. A man bought 12 tons of coal and at the end of the winter guessed that he had $3\frac{1}{2}$ tons left. How many tons did he use?

If the purpose of these false problems is to give drill in percentage, then give problems in percentage as they occur in real life. Percentages are cut off prices, rarely off boards or fish poles. For instance:—

1. If you take a 5% discount on a list price of \$16.00, what do you pay?
2. If a merchant tells a clerk to mark down 10% on the price of suits, what will a clerk write on a price tag on which he crosses out a \$24 original price?
3. A man who burned 12 tons of coal during the winter read an advertisement which guaranteed to save him 20%. If this could be done, how much coal would he save?

If however the purpose of these problems is to give drill on aliquot parts, then phrase them as follows:—

1. Find the amount of this bill of goods:—
 6 $\frac{1}{4}$ yards of sheeting at 16 cents
 8 $\frac{1}{3}$ yards of sheeting at 24 cents

The application of this line of thought to the outline of arithmetic content can be shown by a series of type problems. The letters a, b, c, etc., refer back to the section on content.

- a. 1. Is it safe to load 125 sacks of cement into a 5 ton truck?
 Each sack weighs 100 lbs.
2. What is the difference between $4\frac{7}{8}$ and $9\frac{1}{4}$ on a two foot rule?
3. Will a $2\frac{1}{2}$ inch finishing nail go clear through a $\frac{7}{8}$ inch strip nailed to a $1\frac{1}{2}$ inch cleat.
4. What actual length is represented by a 10 inch line on a blue print drawn to the scale of $\frac{1}{10}$ inch to the foot?
5. I used 47 gallons of gasoline while the speedometer on my automobile changed from 11546 miles to 12298. How many miles per gallon did I get?
6. If oatmeal mush for five persons requires 1 cup of oatmeal, $4\frac{1}{2}$ cups of boiling water and $1\frac{1}{2}$ teaspoons of salt, how much of each is needed when we have two extra people for breakfast?
- c. A three-fourths inch iron pipe has an actual internal diameter of .824 inches; what is the nearest rule measure in sixteenths of an inch?
- c. A time card on a piece of work states that 2 hours and 15 minutes were spent on a skirt, 1 hour and 12 minutes on a waist, 2 hours and 45 minutes on a petticoat, and one hour and 30 minutes on a coat. What was the number of hours spent on all the work?

- g.* Rapid oral drill in trade discount, viz. two fives off a list price of two dollars; a ten and a five off list price of 50 cents.
- i.* My coal bin is 8 feet long, 5 feet wide, and can be filled to a depth of 5 feet. Can I get 6 tons of coal into it? One ton occupies 35 cubic feet.

E. *Suggestive Lessons*

Every lesson must be based on real life situations. These pupils are wage earners, have a share in the responsibilities of financing a family, must render acceptable service on their present job and prepare themselves for a better job.

No other arithmetic is as important to the Continuation School boy or girl as is the arithmetic he must use in his everyday associations with the stores, the banks, the post office, the telegraph office, the tax collector, the freight agent, or the paymaster. When the lessons are based on these actual life contacts, the pupil is at once interested.

Lesson: Marketing problems.

Aim: To emphasize thrifty buying.

Approach: Thrift is not always saving; often it is wise spending.

Development:—Small packages are clean and wholesome but expensive. When is the additional expense justified?

Problems:—Mrs. Jones bought goods worth \$12.62. She gave the clerk a \$20 bill. How much would he count in change?

If the retail price of dried-beef is 50 cents a pound, how much more per pound do I pay for dried-beef, when I purchase a package weighing $3\frac{1}{2}$ oz. for 18 cents? What per cent more do I pay?

A barrel of apples contains $2\frac{1}{2}$ bushels. Good apples cost \$1.75 a bushel. If I purchase $2\frac{1}{2}$ bushels during the year at the rate of 35 cents per half peck, how much would I save by buying a barrel? If two pecks spoiled because I did not have a good place to keep them, did I gain anything by buying a barrel?

I bought a pair of shoes for \$3.75 and wore them out in 6 months. Then I bought a pair for \$6.50 and wore them a year. Which shoes were the most expensive?

A package supposed to weigh a pound was found to weigh $14\frac{1}{2}$ ounces. At 12 cents per pound, how much did the customer lose?

Lesson: Making change.

Aim: To teach the value of counting change easily and correctly.

Approach: (To be supplied by teacher.)

Development: In making change always add to the purchase price beginning with the smallest coin.

Problems: What coins will be taken from the cash drawer and in what order if \$1 is offered for each of the following:

One package of rolled oats.

Two pounds of raisins.

One package of corn flakes.

One can of corn.

Three cans of beans.

One can of salmon.

One pound of butter.

One bottle of olives.

One half pound of cheese.

One pound of tea.

Select proper coins in change for a customer who offers \$2 for a bottle of olives, a pound of tea, and two cans of salmon. Count the change, as a ticket seller would count it to a person who offers a person a twenty dollar bill for two 33c. tickets.

A man draws \$100 from his bank. He wishes to pay a debt of \$6. What is the least number of bills he could have left? Name them. (Imitation money can be used in the class for exercise in counting change.)

The fare from Harrisburg to Altoona is \$4.72.

What would the change be from a \$10 bill?

Select the proper coins for making change and write them out in order.

Teachers can make out various exercises similar to the following:

Purchase	Money Presented	\$0 01	\$0 05	\$0 10	\$0 25	\$0 50	\$1 00	\$2 00	\$5 00	\$10 00
\$2 18	\$20 00	2	1		1	1		1	1	1

Reference: Hunt—Community Arithmetic.

Lesson: Short cuts and checks.

Aim: To draw attention to the quicker methods of calculation; to emphasize mental arithmetic; to note "checks," and to review fundamental operations.

Approach: The teacher should work out a problem by short cut method while class works the problem by the usual method.

Development. Multiplying by 20, by 400, by 7000. Multiplying by 99, by 101, by 49. Multiplying by 25, by $16\frac{2}{3}$ by $12\frac{1}{2}$. Dividing by 100, by 4000. Dividing by 25, $16\frac{2}{3}$, by $12\frac{1}{2}$ by $66\frac{2}{3}$. Learn fractional parts of 100. Check additions by casting out the 9's.

This kind of work is very helpful in dealing with the advanced pupils who need drill in fundamental operations. They object to

doing what they call "sixth grade work," but are interested in short cuts.

Reference. Walsh-Suzzallo—Arithmetic.

F. *Other Lesson Topics.*

Similar lessons are based on household budget, thrift, pay rolls, time tables, marketing, use of gas, water and electricity at home, house furnishings, mail order catalogs, elementary mechanics, gears, belt speeds, levers, problems of the silk mill, the steel mill, the coal mine, the department store, current events. The books listed in the bibliography contain plenty of suggestive material. Always, however, the continuation school teacher should translate the suggestion of the book into terms of the life of the local community.

For Project and Job Sheet Lessons, the related mathematics will be suggested by the project. For industrial classes the mechanic's "handbook" sheet metal, electrical, machinist, etc., furnishes a wealth of material. At the same time it indicates when to stop calculating and begin using a table. The problems involve trade discounts, freight charges, ordering goods from catalogs and price lists, figuring dimensions on scale drawings, use of formulas, development of patterns. For commercial classes the suggestion for related mathematics usually comes from the form or blank used in the commercial transaction. For home economics pupils it is usually a computation based on sizes, quantities, or manipulation of material. Every effort should be made to have this related instruction given either by the vocational instructor, or by an academic teacher in close touch with the vocational instructor.

G. *Bibliography.*

- Bail & West*—Household Arithmetic—Lippincott
Barker—Applied Mathematics—Allyn
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Davis—Vocational Arithmetic for Girls—Bruce
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Taber—The Business of the Household—Lippincott
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Vincent—Vocational Arithmetic—Houghton
Weintrob-Parker—The Silk Arithmetic—P. Simmons Co.

X. SCIENCE

A. *Aims*

To give such a background of knowledge in elementary science as will aid the pupils to understand and appreciate some of the many applications of science which they encounter in daily life.

B. *Content*

The need of these pupils is for qualitative rather than quantitative experience. Practically none of them will ever pursue the study of science beyond a very elementary stage. They need only enough of pure science to enable them to understand in a general way the causes which underlie familiar phenomena and the functioning of well known appliances.

C. *Method*

1. Limitations of available time and equipment restrict the work to its simplest elements. The work should be presented in such a way as to give the pupils scientific information rather than training in the precise methods of the laboratory. This does not imply, however, any concession in the effort to train the pupils in scientific methods of thought. Instruction should be presented in such a way as to train the pupils to grow in the habit and in the ability to organize their information in a scientific way; to interpret the events of daily life on the basis of proved fact rather than of vague guess work; to reason somewhat from cause to effect or the reverse; and to require evidence of such reasoning before accepting the statements of others.

2. The most effective method of instruction is to combine demonstration, brief explanation, and discussion in the class room and to have the pupils so far as possible seek at home or at their places of employment the application or the illustration of the scientific fact discussed.

3. Try to sum up each lesson in a few simple statements or a fundamental law of science. These statements should be developed on the blackboard and transcribed to the pupils' note books. But the purpose of the work is not the compiling of a note book. The note book is useful chiefly as it helps the pupils to associate a scientific law with its elementary application.

4. Have a shelf in the class room upon which are copies of standard elementary text books in subjects such as general science, chemistry, physics, physiography, plant and animal biology. Have two

or three copies of each book and let the pupils use them as reference books to supplement information suggested by the recitation. In addition each pupil should have a copy of one good text on general science.

In preparation for a lesson the teacher should glance through these books and plan to lead the class discussion along lines which can be pursued further by the pupils' use of the text and reference books.

In general do not assign text book lessons. The pupils should consult these books as sources of useful and interesting information rather than as the repositories of prescribed tasks. Let the pupils use these books as supplemental reading done for enjoyment.

5. Both content and method are more fully indicated by the following type lessons.

In selecting experiments for demonstration choose subjects which have these possibilities:

- a. The material used is such that the pupils can easily procure it at home or elsewhere.
- b. The law illustrated is a scientific law which functions in ordinary experience.
- c. The experiment contains no element of danger.
- d. Applications or illustrations of the scientific fact are commonly perceived in home, community or employment experiences.
- e. The experiment is so simple that pupils can repeat it with satisfaction at home or elsewhere.
- f. The teacher should perform the experiment with assistance from as many members of the class as possible. Whenever possible, assign several pupils a week in advance to prepare a demonstration, and let this group present the demonstration with the minimum of direct assistance from the teacher. Through class discussion amplify the points suggested in the outline of the lesson.

Amplify by the use of the text and reference books.

Develop a very simple blackboard outline and transcribe to note books.

- g. In one lesson do not attempt to cover with the class all the material suggested in one of the following lessons. A class which has a forty minute lesson five days each week could not cover all this material. Be satisfied to teach the essential point of the lesson and to encourage the pupils to pursue the topic further in supplemental reading and home projects. Sometimes a teacher will make three or four lessons out of one of these lessons, at other times the teacher will select only enough for one forty minute lesson and will then proceed to the next lesson.

D. *Outline of Course*

1. *Science in daily life.* Materials: an ordinary clay pipe, a gas burner, a lump of coal as large as an egg, lump of sugar, a dozen bits of wood the size of match sticks, a tablespoonful of sand or loam.

Pulverize the coal with the hammer. Do the same with the sugar. Cut one of the sticks into tiny bits. It is still coal, or sugar, or wood. Fill the bowl of the clay pipe three-fourths full of pulverized coal and fill to the brim with sand. Heat the bowl over the gas flame being careful not to burn the fingers. When white smoke comes from the stem of the pipe, ignite it. You have made illuminating gas. When all the gas has burned let the pipe cool and pour off the sand. In the bowl you will find coke and tar. The same thing happens when you repeat the experiment with sugar instead of coal, and again when you repeat with bits of wood.

Conclusion: Heat caused a change and converted the substances *coal*, *sugar*, and *wood* into other substances *coke*, *tar*, and *gas*.

Application: This process is called destructive distillation. It is used in the manufacture of coke, tar, ammonia and illuminating gas from coal. Why did you not procure the ammonia?

Home Project: Repeat the experiment at home.

Compare your apparatus with that of the city gas plant. Why do they not use sugar or wood for gas manufacture?

2. *Science in daily life.* Materials—A water glass, a piece of candle, a soda water straw, a glass of clear lime water. The lime water is prepared in advance by stirring a spoonful of unslacked lime into a glass of water, letting it settle for a couple of hours and pouring off the clear liquid.

Light the candle and invert the dry glass tumbler over it. The flame gradually lessens and goes out because all the oxygen in the air has been consumed. You can probably see the drops of moisture inside the glass which were not there originally. The heat of the flame converted the upper end of the candle into gas just as in the last experiment. This gas is composed chiefly of carbon and hydrogen. The hydrogen combined with some of the oxygen inside the glass and formed a combination of hydrogen and oxygen which is water.

The carbon also combined with some of the oxygen and formed a gas called carbon dioxide. Why can you not see the carbon dioxide? When lime water combines with carbon dioxide it forms a milky solution.

Turn the glass right side up, quickly pour in a little clear lime water, place the palm of the hand over the top of the glass and shake vigorously. What is proved by the appearance of the milky solution?

Place a little clear lime water in a clean glass and bubble your breath into it through the soda water straw. It turns milky. Is any burning going on in your lungs? Do you breathe out carbon dioxide?

Application: What would happen to a mouse if you kept it under an inverted tumbler for any time? Would the mouse "go out"? What happens to pupils who sleep in a room with tightly closed windows? Are they likely to "go out"?

Home Project: Repeat the candle and lime water experiment at home.

3. *Science in Daily Life.* Materials: A piece of candle, two pencils, a lamp chimney. Review the last experiment.

Light the candle, place it between the two lead pencils and place the chimney over the candle and supported on the lead pencils. The candle burns steadily. Why does it not go out? Let the bottom of the chimney rest flat on the table. Is any carbon dioxide being formed as in the last experiment? The purpose of a draft is to furnish a constant supply of oxygen and to carry off the products of combustion.

Application: In your home range or furnace what corresponds to the lamp chimney, the candle flame, the draft opening? What is the purpose of the dampers? If you use a gas range without a chimney, what are the products of combustion, and where do they go?

If you close the damper on a coal range or furnace too tightly the carbon dioxide may escape into the house. In a hot coal fire there is not enough oxygen for complete combustion and the gas at the top of the coal is carbon monoxide which is a colorless, poisonous gas. Just above the coal it gets enough oxygen to burn into carbon dioxide. This carbon monoxide is a deadly poison.

An automobile gets the oxygen necessary for combustion from the air which is drawn into the carburetor. From the exhaust pipe are discharged carbon dioxide and a great deal of carbon monoxide. An excess of carbon dioxide in the lungs causes suffocation exactly like drowning, but carbon monoxide affects the blood and causes toxic poisoning which is usually quickly fatal and at least weakens the system for many weeks.

Therefore never have a garage door closed while an automo-

bile engine is running, and never close stove or furnace dampers so tightly that the gas cannot escape up the chimney. Home Project: Examine the draft and dampers of the coal range or furnace at home until you understand how each one works. Take a lid off the top of the stove and watch the damper move as you turn the handle. Ask your mother if you can clean out the soot and dust from the place where the stove pipe enters the chimney, from the top of the stove, and from under the oven where there is usually a little door marked "clean out."

4. *Chemical Change.* Materials: Two water glasses. A cup filled with vinegar. A spoonful of baking soda. A lemon. Some clear lime water.

Vinegar and lemon juice are *acids*. They are sour. They sting on a fresh cut. More powerful acids like sulphuric acid or muriatic acid will burn and destroy the flesh.

Baking soda and washing soda are bases. They also sting on a fresh cut. More powerful bases like strong ammonia, caustic lye and quicklime will burn and destroy the flesh. They will "cut" or dissolve grease.

Into a water glass one third full of vinegar place a spoonful of baking soda and quickly invert the other empty water glass over it. An acid and a base act chemically on one another. The bubbling is caused by this action of the acid on the base which produces a gas so rapidly that bubbles are formed. Some of the gas goes up to the upper glass. Quickly pour some lime water into the apparently empty glass and shake it. The milky deposit shows that the gas is carbon dioxide. Carbon dioxide is always formed when soda acts chemically with an acid. Repeat the experiment with lemon juice and washing soda.

Application: Sour milk is acid. Why does a little baking soda sweeten slightly soured milk? Why will it not sweeten very sour milk?

The milk sours because bacteria from the air get into it and cause fermentation. Food in the stomach sometimes sours too much during the fermentation of digestion. We have a "sour stomach." If we swallow a half teaspoonful of baking soda it acts chemically on the acid contents of the stomach. We gulp up some gas which is chiefly carbon dioxide and are relieved.

Lime water itself is a very mild base. Why is it given in small quantities to little babies?

Why do lemonade and milk make a bad combination for the stomach?

Whenever animal and vegetable matter rots it goes through fermentation process. Why is it sometimes necessary to put slaked lime on a garden or grass plot? The farmer says the ground is "sour." What is the use of putting quicklime on a dead rat or a bad smelling drain?

Grease always contains a certain amount of fatty acid. Why does pouring washing soda dissolved in boiling water down a sink drain clean out the grease? If the grease is very bad we use lye. Why?

Home Projects: Repeat the experiment with vinegar and soda. If your garden has a lot of sour grass in it ask your father if he thinks some slaked lime will improve it.

If you have five pounds of kitchen grease at home, ask your mother if you can buy a can of lye and make some soap. Follow the directions printed on the can. Do not try this with less than five pounds of grease, and be very careful not to burn yourself with the lye.

5. *Producing a Partial Vacuum.* Effect of this on boiling point.

Materials—An empty quart milk bottle, a sauce pan. Bring a pint of water to a boil in the sauce pan, pour it into the milk bottle. Shake it gently until the bottle is warmed through. The water is no longer boiling. Cover the top of the bottle with the palm of the hand and let cold water run from the faucet over the outside of the milk bottle. The water inside the bottle begins to boil furiously.

The cold water chills and contracts the air in the upper part of the bottle until there is a partial vacuum and the air pressure in the bottle is reduced to a point where the comparatively cool water begins to boil again.

Application: Is boiling water on top of a mountain as hot as boiling water in the valley? Does this mean that you need to boil potatoes longer before they are cooked?

In big plants where they boil preserves or sugar juice they wish to avoid the danger of burning the contents of the tanks, so they operate an air pump which maintains a partial vacuum at the top of the tank. They not only avoid burning but they also save coal.

Home Project: Repeat this experiment at home. When you wash a milk bottle in hot water and set it up side down on an oil cloth covered table, why does it stick to the table? When you wash glasses in hot water and set one inside the other on the drain board, why do they sometimes stick together? If you put them back into hot water will they come

apart? After you have sealed boiling preserves in a fruit jar, do you get a partial vacuum in the top of the jar as the contents cool? When you wish to open the jar of preserves, if you set the jar upside down in hot water, what happens to the vacuum? If you shove the point of a knife blade through the rubber washer, what happens to the vacuum?

From this point on only the outline of lessons is suggested. Detail can be obtained from source material such as is listed in the bibliography.

6. *Air*.—Experiment: A tightly inflated football tied to one end of a suspended rod is accurately balanced by a pan of sand tied to the other end. The air is allowed to escape from the football. Does air have weight? A glass filled to the brim with water is covered by a cardboard, which is held in place while the glass is inverted. The water does not flow out. Does air exert pressure?

Borrow a vacuum sweeper and demonstrate it.

Applications:—pumps, wind, eardrum, siphon, airplane.

7. *Air and Fire*. Experiment: Make an approximate measurement of the percentage of air in the atmosphere by burning a candle under a glass as in 3, the glass being inverted in a saucer of water.

Operate a simple fire extinguisher. Slip a short piece of rubber tubing over the spout of a small new kerosene oil can. Unscrew the top of the can, pour in a pint of water, a cup of vinegar and enough soda, and screw on the top. Direct the resulting stream of carbon dioxide through the rubber tube to the flame of a candle. Repeat outdoors on a small fire, inverting the fire extinguisher and spraying the mixture of liquid and carbon dioxide on the flame.

To determine how much soda is needed, fill a glass one-fourth full of vinegar and add soda, one teaspoonful at a time, until the bubbling froth fills the glass. Calculate how much soda is required to produce an equal result with a cup of vinegar.

Applications:—Smothering a fire with a rug; commercial and fire department extinguishers; slow oxidation in decay, rust, spontaneous combustion, the lungs; the pulmotor.

8. *Yeast, mold, bacteria*.

Experiment: Yeast, flour and water mixed in a cup. One half left in a warm place, one half in a cool place. Observe for two days. This experiment presents a typical continuation school situation. The teacher prepares one mixture on Saturday and it is ready for the Monday class. On Monday

the class prepares a mixture for the Tuesday class and so on through the week.

White bread moistened, put in a covered glass dish, kept in a dark place. Results in three days, in a week.

Cook gelatine with a little sugar and a bouillon cube and fill eight glass covers of fruit jars. Paste a label on the bottom of each and number them. Expose for five minutes, two in the class room, two on a clean rug, two on a rug or carpet which is being swept, two are not exposed. Place one of each kind in a drawer or closet where the temperature will not drop below 60°. Keep the others in sunshine as much as possible. Each day for a week note the growth of colonies of bacteria and the effect of sunlight on growth.

Applications:—Making bread, care of bread box, sour milk, spoiled butter, decay of fruit, flavoring cheese, bacteria of disease, especially tuberculosis, and food poison defenses of the body. Antiseptics, disinfectants.

9. *Bacteria*. Pasteurize one pint of milk and leave it covered. Have another pint of raw milk. Which sours first?

Applications: Preserves, sterilizing clothing, commercial canned food, care of baby's food and bottle, danger from flies.

Similar lessons can be developed on such subjects as capillarity, clothing, foods, soil, refrigeration, patent medicines, specific gravity, ventilation, water, weather, distillation.

Each of the following units deals with an appliance in common use. In these lessons even more than in those which precede, it is essential not to try to include too much in one lesson. For instance, if in one lesson the pupils acquire a clear idea of a fuse plug, what it is, how it is constructed, its purpose, how to replace it if it is blown,—that is enough. If this does not require the full time of the lesson, review the essential law developed in one of the former lessons and discuss applications of that law which were previously omitted. This practice stimulates the pupils in the pursuit of supplemental reading.

10. *Thermos Bottle, Fireless Cooker, Refrigerator*. Heat a piece of thick wire in a gas flame. Establish the idea of conduction of heat. Handle the hot wire in safety by wrapping a piece of paper around it. Hold the hand close to the hot wire without discomfort. Establish the idea of *insulation* or non-conduction by means of material like paper or asbestos, by an air space, or by a vacuum space. Apply to thermos bottle, fireless cooker and refrigerator.

Referring back to the lessons on ventilation, apply to the circulation of air currents in the refrigerator, the proper location of the ice compartment and the need of care in keeping the refrigerator tightly closed.

11. *Building Materials.* Experiments—With a plumb bob determine whether the walls of the school room are plumb. Mix a little plaster paris and after obtaining permission to do so, repair a hole in a plaster wall. Work some putty into proper consistency and with a putty knife set a small pane of glass. With a 1-3-5 mixture, one part cement, three parts sand, five parts crushed rock, fill an empty cigar box with concrete mixture and let it set. Later surface the top with “neat” cement.

With a knife whittle pieces of hemlock, pine, maple, oak, as a test for hardness, working qualities, and permanence.

Applications: Have the pupils observe and report methods used in building a house or making a road.

Home Projects: Repeat some of the experiments at home.

12. *Machines.* In this type of work the important question for continuation school pupils is not “How much?” but it is “Why?” or “How?” Some pupils are able to use formulas beyond their simplest application and to derive pleasure and profit from solving problems in elementary mechanics. These should be directed to such problems.

For the class as a whole the instruction should aim to illustrate such facts as, that in dealing with simple levers the load should be massed over the wheel axle of the wheelbarrow, the cloth should be cut near the pivot of the shears, the broom or shovel should be used with one hand held low. Similar points are that a screw or bolt is loosened by having the head turned anti-clockwise, that a twelve inch wrench when exerted with the zeal of youth may exert a power sufficient to twist the head from a stout bolt and disable a machine, and that the reduction of wearing friction by the faithful use of lubricating oil prevents expense and the need of repairs.

Experiments—With a flat stick as lever, a small three sided stick as fulcrum, a brick as the load, and a set of grocer’s weights, demonstrate the simple lever and show that the force required is decreased as the distance from fulcrum to point of application of force increases or as distance from fulcrum to point of application of load decreases.

Expand the demonstration to include the three types of levers.

Apply to the simple pry bar, broom, shovel, scissors, nut-cracker. Demonstrate the ordinary egg beater as a modifica-

tion of the lever principle to the crank and axle, and to cog wheels or gears.

Develop the fact that the power distance and load distance of the lever correspond to lengths of radius, diameter or circumference, or to relative number of gear teeth.

From the cogwheels develop the law of mechanical advantage.

Attach a spring balance to a string and haul a toy car loaded with weights up a smooth slanting board. Show that the required pull increases as the slant or pitch of the inclined plane increases.

By discussion and diagram develop the fact that the wedge is an inclined plane.

Cut a right-angle triangle of paper four inches high and six inches long. Lay a lead pencil on the four inch edge and wind the paper around the lead pencil. Compare with thread of a common screw, and establish the fact that the screw is a modification of the inclined plane with similar relations of pitch and mechanical advantage.

13. *The Human Body as a Machine.*

Trace the analogy between the law, machine, or apparatus of science and the human body.

The eye and the lens.

The ear and the telephone.

The elbow joint and arm muscles and the lever.

The lungs and oxidation.

The heart and a pump.

The gripping toes and cohesion.

Evaporation of perspiration and refrigeration.

Digestion and osmosis.

But there is one important difference between the human body and a machine. One can usually procure spare parts for a machine to replace worn out parts. There are no spare parts to the human body. Therefore we should take good care of it.

14. *Magnets and Electricity.* With a small bar magnet pick up tacks, make a temporary magnet by stroking a knife blade on the bar magnet, bring a compass needle near the bar magnet and establish the law that unlike poles attract, like poles repel.

Place a bar magnet under a thin sheet of cardboard, sprinkle iron filings on the cardboard and tap the paper gently until the iron filings arrange themselves so as to show the lines of magnetic force. Explain magnetic field.

Make a temporary magnet by winding an insulated wire around a soft iron bolt. Send a current through the wire

and use the magnet to pick up tacks. This type of magnet is the basis of the doorbell, the telephone, the telegraph and the electric motor. Make a careful study of the action of the doorbell. Explain the action of the telephone, telegraph and motor.

Magnetize a darning needle by stroking it on the bar magnet, lay the needle on a flat cork floating in a glass of water, and establish the fact that since the needle swings as a compass until it comes to rest in a north and south position, the earth itself is a huge magnet in the midst of a powerful magnetic field. By discussion rather than by experiment develop the information that when the powerful lines of force of the earth's field are cut by a rapidly moving insulated wire, a current of electricity is generated in the wire. This fact is the basis of the generating dynamo used in the production of commercial electricity.

15. *Knowledge Based on Science versus Superstition.*

Approach: The pupils in the textile mill had trouble with their yarns all last week. The threads did not lie smooth, they snarled and broke. Many of the employees said that the threads were "bewitched."

Development: Scientific thought and method trace Effect to Cause, discover Law, and apply Law to interpret other Effects, Science asks, "What natural cause made the threads snarl and break?" Science answers, "They were too dry." Capillarity, humidity, tension, were not adjusted to one another. Last week was unusually hot and dry with low humidity, and the care taker in the tempering rooms did not make proper allowance in treating the yarn.

This morning I walked under a ladder, and when I came to the next street crossing I was almost run down by an automobile. "It is bad luck to walk under a ladder." As a matter of scientific fact, if I had been as alert and observing as usual I would have walked under the ladder only if I were sure that the ladder would not slip, or that the man working on it would not spatter paint on me. But I was thinking about something else and when I arrived at the next corner my continued lack of alertness and observation let me blunder into the path of an automobile. The *Cause* was in myself, not in the ladder.

"If you kill a spider it will bring rain." Some superstitions are merely a slight distortion of a scientific fact. Spiders are very sensitive to atmospheric changes and every twenty-

four hours the spider makes some alteration in its web to suit the weather. Therefore, before a rain more spiders than usual will be seen at work on their webs, and a person whose inclination is to kill spiders is more likely to kill one just before a rain.

Distinguish therefore between baseless superstition, and signs and proverbs based on the long experience of shrewd observers,

“Mackerel sky, mackerel sky,
Not long wet, nor yet long dry.
Evening red and morning gray,
Help the traveler on his way.
An evening gray and morning red,
Will send the shepherd wet to bed.”

Home projects: Investigate superstitions and signs, and try to trace an Effect to its Cause.

16. *The Use of Electric Appliances in the Home.*

The electric dry cell. Cut into a worn out cell enough to show the relation of zinc container, carbon core, chemical filler, sealed cover, and binding posts. Discuss the generation of current by chemical action. Show method of wiring two or more cells in series and importance of clean tight connections.

Insulation: Cut through the insulation of a wire and examine the bright wire, the rubber or paraffined coating, the outer fabric cover. Discuss leakage or short circuit due to imperfect insulation and show how to wrap with insulating tape. Discuss conductor, good contact, low tension current, ordinary household current, and dangerous high tension current.

Attaching a plug. To one end of a double insulated wire attach a plug for an electric iron; to the other end attach an ordinary socket plug. Show how to take the plugs apart and to put them together; how wires should be firmly bound by screws, with no ends left loose; how any wire left bare should be safely insulated up to the binding screws by means of insulating tape; how by means of tape the wires should be prevented from rubbing at the place where they enter the plug. Emphasize that trouble with an electric appliance is usually due to a loose connection or to the wearing out of insulation in the plug. Show how the current cannot flow through the wires if the plugs are not completely thrust or screwed into the receptacles.

Fuses. Examine fuse wire and fuse plugs. Explain that their function is to melt and thus break the circuit when a circuit is overloaded. This overloading is likely to happen if the washing machine, sweeper, or flat iron is operated when a number of lights are operating on the same circuit, or when a lump of clothes sticks in the wringer. Show how to detect the proper circuit by turning on the lights; how to detect the melted fuse by the discolored appearance or the fact that the wire has disappeared; how to replace the fuse with a new one after the cause of the trouble has been remedied.

Flat irons and toasters. Examine them from the outside, but do not try to take them apart unless you are sure you will not damage them. By diagram explain internal construction and explain the relation of the resisting material to the generation of heat. Warn against dangerous fire risk through failure to disconnect when through using.

Sweeper. Be sure the sweeper is not connected before beginning to examine it. Remove the dust bag, explain functions and operations of switch, motor, and fan. Explain oiling and cleaning.

Electric Meter. Show how to read the meter, explain unfamiliar terms used on the gas bill, as kilowatt, kilowatt hour and show how to figure the amount of the bill.

Telephone. Unscrew the cap from the receiver and pick off the metal diaphragm. Let the magnet core drop forward but do not try to disconnect it. Note that the transmitter works on the same principle as the receiver. Explain the relation of sound vibrations from the voice, diaphragm vibrations, disturbance of the magnetic field in the core, and the reversal of these relations at the other end of the wire. By tapping a suspended metal plate with a lead pencil and then striking it violently show the contrast between a gentle but clear ringing tone and a jangle. Apply this to tone of voice for satisfactory telephone conversation. Explain the resemblance between the function of the diaphragm in the telephone, that of the reproducing diaphragm on a phonograph, and the human ear.

E. Equipment

Apart from the supplemental reading books suggested, this course requires no equipment which cannot be easily procured as needed. If equipment already available in a science laboratory is used, the

experiments can be performed with a greater degree of refinement and accuracy. In general, however, such procedure is not recommended. One important purpose of this course is to reveal to the pupils that all about them are to be seen applications of science to the common things of daily life. The value of this course lies not so much in what the pupils do and see in the school as it lies in what they do and see outside the school as a result of interest stimulated in the school.

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Elkhuff—General Science—Heath
Hessler—Junior Science—Sanbery
Hodgdon—Elementary General Science—Hinds, Hayden & Eldredge
Snyder—Everyday Science with Projects—Allyn & Bacon
Thompson—Outline of Science—Putnam
Trafton—Science of Home and Community—Macmillan
VanBuskirk & Smith—The Science of Everyday Life—Houghton

Suggestive List of Supplemental Reading on Scientific Subjects.

Baynes—Wild Bird Guests, How to Entertain Them—Dutton
 —Boy Scouts and Girl Scouts Manuals
Browne—Peeps at Industries—Black
Burns—The Story of Great Inventors—Harpers
Cochrane—Wonders of Modern Mechanism—Lippincott
Collins—The Book of Electricity—Appleton
Conn—Bacteria, Yeasts, and Molds—Appleton
Conn—Stories of Germ Life—Appleton
Doubleday—Stories of Inventors—Doubleday, Page & Co.
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Moffet—Careers of Danger and Daring—Century
More—Benjamin Franklin—Houghton
Morris—Household Science and Arts—Amer. Bk.
Smith—The Story of Iron and Steel—Appleton
Tappan—Makers of Many Things—Houghton
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XI. APPLIED ART

A. *Aims*

1. It is necessary to select from the large amount of available and valuable material the limited amount which can be taught in the time given, and to base that selection on the needs and interests of the individual pupil or of the group.

2. One aim is culture. There is culture in the appreciation of a fine painting; of the color, pattern design and delicate weave in a silk coat lining, or a necktie; of the sensitive balance of a water turbine or of the marvelous precision of a milling machine which cuts metal to a fraction of a thousandth of an inch. One phase of culture is the ability to appreciate good craftsmanship whether in the studio, the library, or the factory. One aim of art instruction in the continuation school is to help the pupils to realize that art is all around them to be enjoyed and to add zest to life.

3. Just as applied art is that which results in commendable creation so must the aim of instruction in art be to induce commendable action in the field of art.

Such action in continuation school pupils, each according to his capacity, should take the form of—

- a. An improving judgment as to what constitutes good taste.
- b. Growing specific knowledge on elementary applications of art to activities at home and in employment.

B. *Content*

1. *Art applied to personal and home use.* Matching and combining colors; simplicity, balance, and proportion in design; color and design applied to wearing apparel and household furnishing; discussion of famous pictures; masterpieces of music.

2. *Art applied to employment.* Develop the extent to which art is applied in conventional and special design as in patterns for textiles, wall paper, linoleum; the application of lettering to sign writing; of drawing to illustrated advertisements; of color, design, and proportion to displays of goods, show case and store window arrangement; in lighting effects; in the selection of color, type, paper and arrangement in job printing; in design for electrical, sheet metal and wood products.

C. Methods

Read carefully the material presented later under methods in art for home economics and for commercial work which refer to the section above, namely, art applied to personal and home use, and to employment.

This material deals with applied art for boys and girls. It is general applied art with special emphasis on the home and on employment. The teacher is the single academic teacher in a small school or a special art teacher in the large school.

The work should be presented in unit lessons and developed by class discussion. A very simple, non-technical vocabulary should be used. The stated aim of each lesson should mention a concrete project rather than an abstract phrase of art. Thus, the aim of a lesson is "To select the right necktie" rather than "To study color harmony," "To choose wall paper," rather than "To get proper values in interior decorating."

Simple free hand sketching and water color work not only give good practice to the pupils but are often the most effective ways of testing whether the pupils caught the point of the lesson.

Select from the course in art for grades seven to ten. At the same time get some material from as far down as grade four, especially for pupils who had little or no instruction in art before entering the continuation school.

The following suggestions indicate other methods:

The development of monograms for marking linen.

Simplified animal and bird drawings applied to cross-stitch and embroidery.

Cutting and printing of simple units in linoleum blocks.

Drawings illustrating proper setting of table.

Drawings showing good arrangement of pictures on the wall, articles on mantle, rugs, etc., on floors.

Simple house plans with discussion of convenience and comfort in arranging floor plans and room elevations.

Cuttings in colored papers, showing good vase shapes and flower arrangement.

Simple figure drawings traced from fashion journals and filled with appropriate color.

Color notes made from pieces of cretonne, silks, feathers, etc., and applied in discussions relative to combinations for dress, for room interiors, and house exteriors.

Cutting shape front of own house and with colored papers showing planting of shrubbery, flowers, etc., to improve appearance.

Collecting and mounting of good and bad furnishings for the home.

In studying famous pictures and statuary use prints like the Perry, Elson, or University prints, and library reference books; encourage the pupils to visit museums and if possible accompany

them; get them interested in the story of the picture and the life of the artist. Use similar methods for music, with special reliance on the phonograph at home and at school.

The art instruction sometimes combines with the civics instruction in lessons dealing with the architecture of the local court house, school house, or railway station; the planning of streets and parks; laying out shrubbery or flower beds for the home.

Line, tone and color have many applications to matters of daily interest to the pupils, as the facades of buildings; weave of rugs, blankets, baskets; contours in vases, brass spinning, wood moldings; designs on pottery and glassware. Use illustrated catalogs and samples of such things. Combine information on the process of manufacture with discussion on the artistic merit of the finished product.

D. Course in Elementary Drafting

Elementary drafting as a special course should be given in continuation schools as a prevocational opportunity on the same basis as woodwork, electrical work or printing. The instructor is a skilled teacher of drawing.

1. *Aim.* The special aim is to give the pupils a try-out experience and some basic manipulative skill. A high standard of neatness and accuracy should be required.

Very little time should be expended in the early lessons on methods of lettering, on exercises on the use of instruments, or on geometrical constructions. The copying of plates should be reduced to a minimum and drawings be made from carefully selected objects. After two lessons on use of instruments, conventional lines, relation of views, dimensioning and lettering, the pupil should be fairly launched on drawing from objects. Teach one simple system of single line Gothic lettering, giving each pupil a blue-print copy for home practice. Skill in tracing, lettering and using instruments will develop as the course proceeds. Knowledge of the use of conventional lines will develop as the need thereof is created by the increasing complexity of the objects drawn.

The essential difference in detailed content between the drafting course and the course in elementary working drawing, which is presented later, is that the drafting course gives training in the use of instruments, in inking and tracing, more practice, and the opportunity to develop some drafting skill in addition to a working knowledge of the principles of mechanical drawing.

2. Outline of elementary drafting course

First Unit

(After the first unit is finished, select from other units.)

- a. Information and practice on instruments, drawing board and materials.
- b. The drawing; conventional lines; relation of views; dimensions, title, lettering, blue prints or single line Gothic lettering for home practice.

- c. Drawing of simple rectangular object, full size, dimensions by measurement, indicate dimensions, place title. Give much practice in isometric sketches of objects, both free hand and to scale.
- d. Draw slotted, grooved, and bored objects requiring use of broken lines for hidden dimensions, full size. Practice making isometric sketches, free hand, with dimensions indicated, and convert these to orthographic projections.
- e. Draw box or drawer to scale. Get cooperation of arithmetic teacher on teaching pupils to figure scale lengths.
- f. Draw vise anvil or other object with some beveled or filleted contours. Use of center lines, finish marks and notes. Further drill on scale drawing.
- g. Draw cylinder head, collar, plate or some other circular object with holes drilled, tapped, or reamed. Center lines, radial lines.
- h. Sectional views, pulley, flange. Introduce the visualizing of simple blue print or plate working drawings.
- i. Freehand sketching, with dimensions of furniture and machine parts. Orthographic sketching. With continuation school pupils do not pursue perspective sketching beyond its simplest elements.
- j. Working drawings of the objects sketched.
- k. Introduce inking and tracing, and review by drawing objects similar to those already drawn. Introduce simple geometric construction.

Electrical Unit

- a. The working sketch; with dimensions; insurance, structural, and trade conventional symbols.
- b. Make drawings such as conventional diagram for electric bell, push button and dry cell.
- c. Side wall of room with diagram to scale showing two bells wired in multiple.
- d. Lay out the wiring system of an automobile.
- e. Make the usual drawing for wiring a ceiling and installing a drop light. Use trade symbols and insurance symbols.
- f. Study the wiring blue print in the plans of a school building or factory. Draw sections of it in detail.

Architectural Unit

- a. First floor plans for small house from plates, with detailed conventions on building material, stone, brick, cement, etc.
- b. Other floor plans. Study of blue prints.

Machine Shop Unit

- a. Detail drawing of patterns or parts of machines.
- b. Standard bolts and nuts; screws and rivets; stock parts and conventions.

- c. From rough sketches with accurate measurements, make working drawings of parts of a machine, viz., three speed belt pulley.
- d. Sketch for installing counter shaft.

Sheet Metal Unit

Start with sketch and draw for the development of the pattern.

Lay stress on the geometric constructions.

- a. Simple cylinder, stove pipe or cookie cutter, draw for pattern.
- b. Pint tin cup with handle, draw for pattern.
- c. Sink strainer, elevation and plan, develop pattern, radial line.
- d. Quart measure with flaring lip, elevation and plan, approximate pattern.
- e. Funnel, elevation and plan. Develop pattern, radial line.
- f. Similar work involving development of patterns by parallel line and triangulation depends on the special interests and ability of the class.

3. Equipment for class of twenty pupils

Items marked (x) can be made in the school shop.

25 complete sets of instruments.

India ink, paper, blackboards.

x—Drawing boards, one for each pupil, 23 x 17 inches.

x—25 T squares, 24 inches long.

25 - 60 degree triangles

25 - 45 degree triangles.

25 protractors.

x—Drawing tables for 20 pupils. Individual tables according to design of instructor or tables for two pupils.

x—Racks, each to hold 20 drawing boards. Cabinet with shelves and drawers to hold drawing and tracing paper, tracing cloth, blue print paper, thumb tacks, art gum, sandpaper, blocks, pencils, erasers, etc.

4. *Methods.* The course should be laid out on a series of blue print lesson sheets mounted on cardboard and shellacked. Special instructions on routine procedure of the class room, on care of instruments, on methods of manipulation should be included in the lesson sheets. After a few weeks as the pupils make different rates of accomplishment the work becomes almost exclusively individual and concise but clear written instructions on each lesson are necessary. References on the lesson sheets to page and paragraph of standard text books simplify the making of the lesson sheet.

The essence of the course especially in the preliminary unit, lies in the careful selection of objects to be drawn. These should progress in difficulty and so far as possible should be patterns or parts of

real machines. Whenever possible have two, three or four objects any one of which can be used for a given lesson. Thus, for the first lessons have rectangular, grooved, bored, and slotted objects of wood, metal, or tile, and of different sizes.

E. *Course in Elementary Working Drawing*

Pupils work at ordinary desks. The equipment for each pupil is a good ruler, good pencil, and a pencil divider or compasses good enough to be rigid when set. Drawing boards are very desirable but not absolutely essential. T squares and triangles such as can be made by pupils in the woodworking class are desirable but not essential. Little or no inking or tracing is included.

1. *Aim.* The special aim of the course is to teach pupils to make and read simple working drawings. In making such drawings with lead pencil the standards of neatness and accuracy are those of good workmanship.

This aim can be realized with the minimum equipment suggested above and by a teacher of modest experience. According to local conditions available resources of experienced teachers, assignment of time, and increased equipment, make it possible to increase the aims to any point up to the full aims of the course in elementary drafting. Wherever possible the instruction should be given by an industrial instructor.

2. *Content.* The content is precisely that of the course in elementary drafting through the first unit, the work being done with lead pencil and ruler instead of with instruments. After the first unit is completed, selections are made from the other units in accordance with the interests and needs of the pupils. Where the instruction is given by an industrial instructor this selection of content makes the course one in Related Drawing, much of the content being determined by the shop projects to which the drawing is related.

3. *Method.* The method differs from the method given in the drafting course because on a given day many of the pupils in a class will be working on the same lesson. Thus group instruction is more common than in the drafting course and the necessary reliance on detailed lesson sheets is not so great. That is, on many days the work will be planned as a unit lesson. This statement, however, must be qualified when applied to pupils who are carrying out a job sheet lesson where the related drawing of that lesson requires special individual instruction. On frequent occasions, especially in drawing related to woodwork and to electrical work, the product is a shop sketch with indicated dimensions rather than a mechanical drawing. The relation between arithmetic and drawing is very close in this

kind of work so that frequently the lesson is a combination of the two subjects.

F. *Course in Lettering and Sign Writing*

Only in the largest school is a special class justified. The occasional pupil who has a decided interest or ability in this line should be encouraged to develop the talent. For most of the pupils the work should be confined to one or at most two styles of letters and include slant, proportions, spaces. Encourage the pupils to practice at home and give them opportunity in school to apply their skill in making posters, designing monograms, laying out and cutting stencils. Require a high standard of accuracy and neatness.

G. *Art Applied to Home Economics Work for Girls*

1. *Aim.* To give the pupil standards which will result in ability to combine beauty and usefulness in the selection or making of wearing apparel and home furnishings.

2. *Content.* Art instruction for vocational home economics has no place in a continuation school for fourteen to sixteen year old girls. The needs of the rare pupil who might profit by such work will be met adequately for this age period by combining specific vocational guidance with the art work in general home economics.

Special teachers of home economics will not neglect the material suggested as applied art content in the sections on personal and home use, but they will usually depend on a special teacher to give that instruction and will confine their instruction on applied art to its direct relation to the various units of home economics work. The important topics are—

The study of fabrics; textile, dress, and millinery designing; house planning; interior and furniture designing; interior decoration and furnishing; the relation of quality, style, price, and good taste in the purchase of wearing apparel and of house furnishings.

3. *Methods.* There should be a clear understanding as to which teacher is to give instruction on each topic. In general the instruction on basic theory and on general application will be given by the academic or special art teacher rather by the home economics teacher. The latter will point out the specific relation or application of the other instruction to the article which is being constructed in the cooking or sewing room, whether it be a salad, a strawberry short cake, a color combination on a hat or the draping of a skirt.

In general then, the academic teacher will proceed by a series of unit lessons, and the home economics teacher will cover the application of art where it is entitled to a place on a job lesson sheet.

House planning is best presented by studying simple house plans, and discussing proportions and convenience of arrangement. For interior decorating and furnishing an effective device is to lay out the floor plan and wall plan of one room and fill in with pictures of rugs, furniture and drapings cut from mail order catalogs, using colors to remedy any defects or omissions in the pictured article. Use advertising material sent out by dealers in textiles, paint, wall paper, jewelry, rugs, dress patterns.

Keep instructions simple and practical. Use the vocabulary of everyday, not the technical terms of art. Measure results in the way in which the girls dress for school and for work and in what they tell about their efforts to apply their art instruction in their homes.

H. *Art Applied to Commercial Work*

For most schools and for most pupils the purpose and scope of the work is indicated in the section on art applied to employment.

For special commercial groups it is possible to add a limited amount of instruction on design and color in advertising, balance and proportion in laying out typed material. For classes from retail stores there is value in special stress on draping, display of goods, and effect of artificial light and color.

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Drafting and Working Drawings

- Bailey*—Mechanical Drawing for Beginners—Manual Arts
Collins—Drawing & Construction—Scribner
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Hutton—Mechanical Drawing for Continuation Schools—Scott Foresman
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 Shop Sketching—International Text Book Co.

Applied Art for Girls

- Branch*—Illustrated Exercises in Design—The Prang Co.
Daniels—The Furnishing of a Modest Home—Atkinson Mentzer
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Lettering

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XII. COMMERCIAL WORK

A. *The Needs of the Pupils*

The survey of junior commercial occupations presented in Bulletin 54 of the Federal Board for Vocational Education established certain facts on which can be based conclusions applying to the 14-16 year group in Pennsylvania.

Most boys and girls who hold junior business positions have completed a grammar school course. Promotion in this field depends more on personality and qualifications of the individual than on the nature of the position held. In general those qualities which cause a pupil to leave school before the completion of the eighth grade do not go with a personality likely to win success in commercial work.

With due regard for the fact that in a continuation school a general rule should sometimes be modified to meet the needs of an exceptional pupil, it follows that admission to vocational commercial courses should be restricted to pupils who have at least an eighth grade education. And since oral English is an effective means for developing and exercising the qualities implied in the word personality, it follows that for pupils in commercial courses special emphasis should be placed on oral English.

Very few of the 14-16 year group have positions requiring a knowledge of bookkeeping, shorthand, typewriting, or salesmanship, nor can they expect to qualify for such positions or obtain them until they are several years older.

The minimum requirement in English for a stenographer or typist is at least two years of high school work. Practically no continuation school pupil meets this requirement, so courses in stenography should not be maintained, and any work in typewriting which is given should be justified for some reason other than that the intention is to train real typists.

The accounting side of commercial bookkeeping is beyond the power of these children, and the instruction in elementary business practice usually given as part of a school course in bookkeeping is done much more effectively for continuation school pupils through a course in elementary business practice.

Salesmanship requires a maturity to which, with very few exceptions, these pupils will not attain for several years. In the field of elementary store practice, however, is much instruction of value to them.

A few pupils will be found, usually working for their fathers, who can profit by instruction on methods of simple bookkeeping. A few will be found employed in small offices who can profit by elementary instruction on the mechanics of the typewriter and some work in fingering. A few who sell goods in small stores or five and ten cent stores can profit by instruction in the courtesies of salesmanship. But the needs of these individuals can be met by enrolling them in a course in elementary office practice and there giving them the additional special instruction which they need.

Many continuation school pupils hold low grade industrial positions and seek a means of transfer from factory to office work. If they lack that essential elementary education which is a prerequisite for office work they should concentrate their efforts in continuation school on making up this deficiency. The guidance work of the school should instruct them on the possibilities of eventually realizing their ambitions through further study in evening school or business college. Meanwhile they can profitably pursue a course in elementary business practice as a prevocational or try-out experience.

Most of the 14-16 year group already employed in commercial work are messengers, general clerks, and bundle wrappers. Some, however, are already employed and all are in line for employment as receiving clerk, statement clerk, stock clerk, shipping clerk, entry clerk, ledger clerk, cashier, typist, office machine operator, file clerk, billing clerk, dictaphone operator, or delivery wagon driver.

B. Organization for Instruction

The facilities for giving instruction in commercial classes may be classified in three groups.

1. A few large schools where the number of pupils who can profitably pursue a commercial course justifies having a full time specially trained commercial teacher. In addition enough pupils are employed in stores to justify a course in retail store practice.

2. A large number of medium sized schools where the commercial groups can be handled by having a high school commercial teacher devote two hours a day to this work. Related studies will be given by a continuation school teacher of academic subjects.

3. A small school where a commercial course, if given, must be handled by a continuation school teacher who is not an expert in commercial studies.

C. Types of Courses

According to local opportunities for organization one or more of the following courses may be given:

1. Vocational Course in Elementary Store Practice, by a commercial teacher.

2. Vocational Course in Elementary Office Practice, by a commercial teacher.
3. Prevocational or General Course in Elementary Business Practice.

D. Allotment of Time for Each Pupil

1. *Vocational Commercial Classes*

General Courses in English, Social Science (Civics), Commercial and Industrial Geography	2 hours
General Courses in Arithmetic, Hygiene, and Applied Art—	2 hours
Related Work in	
Business English	20 minutes
Related Spelling	30 minutes
Business Penmanship	30 minutes
Business Arithmetic	30 minutes
Special Business Information	30 minutes
Total	2 hours
Technical Commercial Work	2 hours

2. *General Commercial Classes*

Material is selected from that suggested in the outline for the related and technical work and the time allotment varies from 40 minutes to 2 hours according to local conditions.

E. Detail on Related Work

The basic material is the same for store practice and for office practice, but the teacher must be well informed and constantly alert, in order to change or emphasize or expand detailed points to meet the varying requirements of different individuals or groups.

Related English

1. Oral: Oral reports, sales talk, public speaking in a business meeting, giving directions, telephone conversation, dramatized sales, simple parliamentary procedure, debates on business topics.
2. Written: Business letters—letters ordering goods, letters acknowledging orders, letters of application, letters of introduction, letters of recommendation, letters asking favors, letters asking for remittances, simple sales letters.
Business reports, style and content of sales booklets, instructions to be printed, concise statements for records, notes and memoranda.

Related Spelling

A few words each day drawn from the business topic discussed, as,

<i>Topic</i>	<i>Spelling</i>
Transportation	Names of towns
Delivery	Names of streets
Dates	Names of months
Shoes	McKay, welt, vici, tan, russet
Files	Carbon, index, cross reference
Bookkeeping	Ledger, journal, entry
Typewriting	Rivet, space, type, eraser
Cotton	Fiber, staple, gingham, calico
Silk	Voile, crepe de chine, taffeta, tus- sah, textile
Shipping	Invoice, receipt, flimsy, delivery
Abbreviations	Inc., Penna., inst.

Penmanship

Use the standard drills on business writing approved for local schools.

Drill on position—body, arm, hand, pen, paper.

Drill on movement—without pen, with dry pen, with ink on pen.

Direct oval and other drills

Capitals based on direct oval—O, A, C, E.

Easier small letters—i, u, e, w, o, a, c, t, d, q, j, g, p.

Word writing.

Figures.

Much drill on movement. Use paper ruled to quarter inch height and do not let the movement exceed this height. Later reduce the ruling to three-sixteenths or even one-eighth inch. Many commercial forms have ruling less than a quarter inch.

Reverse oval and figure eight drills. The remaining capitals are largely based on these drills. The remaining small letters.

Focus attention on form. If a stop is made before throwing the loop on v, o, etc., and after the down stroke on h, b, t, etc., legibility is improved. If on practically all of the small letters the down stroke is made straight, and its contact with the line is emphasized, a smooth even style will result. Emphasize the need of care in making figures and the signs to represent dollars, cents, per cent, etc. Give much practice through dictation in order that pupils may not depend on the copy.

Do not sacrifice form for speed.

After the preliminary drill, the work is made more interesting by using business forms. Practice in ruling is obtained by making forms for checks, notes, drafts, receipts, bill heads.

Do not overlook the special penmanship requirements of certain kinds of work. For instance in card indexing, the letters should be of normal width but of about twice the normal height; a shipping clerk should write a large bold hand which can be easily read and is not rendered illegible by rough handling; a sales clerk must exercise care to leave both original and carbon of the saleslip legible as to name and address.

Arithmetic

Give a great deal of drill on rapid calculation in the four fundamental operations on integers and fractions, common and decimal. Practice horizontal addition and subtraction.

Give considerable drill on aliquot parts, percentage, interest, discounts, profit and loss, commission. Practice finding the time between dates, and arranging it in aliquot parts of 60 days and 6 days. Do not omit the common business practice of figuring per cent of gain on the selling price rather than on the cost price. Figure correctly wages, budget forms, and distributing amounts to record on the cash register.

Apply ratio drills to practical problems, as:—

Two handkerchiefs cost 25 cents, 8 handkerchiefs cost?

Five inches is what part of a foot?

Nine ounces is what part of a pound?

Twenty-four inches is what part of a yard?

Special Business Information

Each day develop specific local information on such topics as are given below. Make visits where possible, use pictures, and make extensive use of illustrative material like charts, graphs, printed forms and folders.

Electric cars: Routes, schedules, fares, passenger and freight facilities.

Office buildings: Location, names.

Principal stores: Location, names, type of business.

Public buildings: Location and purpose—city hall, court house, post office, railroad stations.

Principal business districts: Location and type—wholesale, retail, factory.

Merchandise practice

Cash purchasing, cash register slips, sales tags, charge accounts, opening, purchasing, paying, collections, identification.

Retail store services:—delivery, telephone, orders.

Wholesale:—jobbers, traveling salesmen, and their relation to retailers. Discounts, invoices, bills of lading, sight drafts.

Telephone practice

Procedure in having a telephone installed.

Use of telephone for local, two party, long distance, trunk line calls; telephone courtesy; telephone memoranda of calls; pitching the voice for clear enunciation.

Telephone bills, collections, charges.

Use of directories, special fire and police calls; transmission of telegrams, money, etc.

Telegraph practice

Procedure in sending telegrams, day letters, night letters.

Cablegrams and use of codes.

Post Office practice

Mail service:—postage classes and rates, regulations and practices in handling letters, opening and closing mails, post office boxes, etc.

Special mail services:—registered mail, special delivery, recall of letters, etc.

Money order service:—sending money orders, domestic and foreign; lost orders, etc. Receiving and cashing money orders.

Parcel post service:—Classes of goods received; zones, and charges; general use.

Foreign mail service:—letters; money orders, parcel post.

Postal savings banks:—depositing and withdrawing procedure.

Banking practice

Savings banks:—procedure in opening savings accounts, deposits, deposit contract, withdrawals, dividends, transfers of accounts, lost books, etc.

Commercial banks:—procedure in opening accounts; kinds of accounts; deposits of all kinds; collections.

Pass books and deposit contract.

Checks; formal requisites. Use, manner of writing; protection.

Indorsements: requisites; legal effect.

Bank statements; reconciliation of checkbook and bank balances.

Other facilities:—collections, special deposits, bank drafts, certified drafts, certified checks, certificates of deposit, travelers' checks, collections.

Bank loans:—basis: procedure; kinds of security; personal and property credit, etc.

Safe deposit procedure.

Railroads

Freight services; packing, forwarding and receiving procedure; elementary freight classification, tariffs.

Passenger services; tickets, time-tables, baggage, Pullman cars.

Express

Sending goods; packing, sending procedure, tariffs, charges.

Receiving goods; collecting charges, prepaid.

Other services of the express company; collections, money orders.

Commercial agencies

Credit information, Dunn's, Bradstreet's. Local credit associations.

Property insurance

Property, as store, marine.

Casualty, as automobile.

Indemnity.

Note that this entire section on related work in English, spelling, penmanship, arithmetic, and special business information forms an outline of work covering two hours of instruction per week, whether the other two hours of technical commercial work are devoted to vocational store practice, or office practice.

F. Detail on Technical Commercial Work Course in Store Practice

Aim. These classes are usually composed of boys and girls who work in department stores. The aims of the course are to give

- a. Knowledge of merchandise
- b. Knowledge of routine procedure
- c. Training in business ethics and personal improvement
- d. Guidance for promotion

Content

a. Merchandise

- (1) Textiles—Study in succession cotton, wool, silk, linen.
Where and how grown, gathered, preliminary treatment.

Structure of each fibre and relation to spinning, drawing, twisting, winding.

Weaving process, looms, history and structure.

Bleaching, dyeing, printing, tentering, calendering.

Famous inventors in textile manufacture.

Test by fraying out and burning single threads; cotton and linen smell like burnt paper, wool and silk smell like burnt feathers.

Special manufacture and qualities of mercerized cotton, artificial silk, wild silk.

Study of weaves, plain, diagonal, wide wale, satin, corduroy figure. Mount samples and keep notebooks.

Names, qualities, and uses of cotton goods, as gingham, calico, sheeting, lawn cloth; woolen goods, as woollens, worsteds, bedford cloth, shoddy, broadcloth, flannel; linen goods, as crash, damask, huckaback; silk goods, as crepe, taffeta, poplin, foulard, pongee.

(2) Similar study of other merchandise, as skirts and suits, notions, toilet articles, shoes and leather goods, toys, kitchen ware.

(3) Consult the buyers for sources of information. Discuss how they select and buy goods. History of famous department stores of London, Paris and the U. S. The picturesque and economic facts in buying goods abroad. The development of the chain store, five and ten cent store, mail order store.

b. Store Procedure

Duties and responsibilities of various junior positions: cashier, examiners, stock marker, messenger, bundle wrapper, floor boy. Instruction in specific duties, as wrapping goods in paper with string, without string, use of cardboard, tying knots; tying packages for parcel post, express; folding or packing suits, dresses, skirts, waists; making change readily; marking tags legibly; rendering cheerful service with speed, accuracy and courtesy; making out printed forms, use of time clock and cash register, tube system or cash carrier. Store organization, store directory, store system. Requisitions for stock, receipt of stock, care of stock. Sales slip practice, delivery on charge account, refunds and credits, C. O. D. delivery, discounts, damaged goods.

c. Business Ethics and Personal Improvement

Honesty, courtesy to customers and fellow workers, strict adherence to store rules, dignity and responsibility, loyalty

to firm, kindness, good sportsmanship. Careful attention to personal appearance, dress, attitude, manner, the speaking voice, choice of words, general good health habits.

d. Guidance for Promotion

Biographies of famous merchants, duties of executive heads, buyers and department managers, analysis of functions of positions and lines of promotion, specific counsel on personal improvement, opportunities for further training in evening school or business college.

In addition to the foregoing instruction on merchandise, store procedure, business ethics and personal improvement, and guidance for promotion there is under each of these items a body of information on training which applies to the job held by the pupil.

A junior sales person needs lessons on the technique of selling, such as the approach to the customer, talking points of merchandise, closing the sale, how to deal with difficult types of customers, use of cash register and tube system; color sense, standards of good taste, display, special information on qualities of merchandise; knowledge of the meaning of turnover, inventory, volume of sales, mark up and mark down; special emphasis on personal appearance and hygiene, care of hair, breath, teeth, hands, feet, and nervous control.

The messenger needs special instruction on the duties of the position according to whether the pupil is a boy or girl; on the floor; in a large or small office; in a millinery, manufacturing or alteration room. Suggestive topics for lessons are, store directory, store organization, store rules, local geography on streets and public buildings; the need of promptness, accuracy, thoughtfulness, good manners, attractive personal appearance; training for promotion to inspector, wrapper, head of floor boys or girls, cashier, office positions, general clerk, stock clerk, or sales person.

Bundle wrappers, cashiers, and examiners need instruction on checking sales slips for form, items, legibility, agreement as to kind, number, price and total, correct address, floor manager's O. K.; on knowledge and use of supplies, grades of paper, twine; on receiving money, counting back change; on accuracy, responsibility and alertness.

3. *Method.* The pupils have a large amount of information which is unorganized. The task of the teacher is to supplement this information and to organize it. In the fields of merchandise, and guidance for promotion, the greater part of the information is supplied by the teacher; in the fields of store procedure and business ethics, by the pupils. There is a close relation between the need of developing morale among the pupils, and the instinctive response

of pupils of this age to an appeal to the gang spirit. An outline of a unit of information on merchandise or of a code on manners or business ethics is likely to be more effective if worked out by the pupils than if constructed by the teacher.

Reduced to terms of the day's instruction the foregoing suggests these methods:—

- a. The teacher plans in advance a lesson.
- b. By the showing of samples of merchandise, pictures or sales slips, or by the citing of a common experience or a specific incident, the teacher stimulates the interest of the pupils to analyze or study the concrete topic.
- c. The lesson develops through the discussion and contributions of pupils and teachers.
- d. Having in mind the prearranged plan of the lesson, the teacher has an outline developed on the blackboard.
- e. The points suggested are supplemented or illustrated by the use of books or other means.
- f. The points established are fixed in memory by oral review, by a brief written exercise, or by note-book work.

The notebook is a valuable device in instruction in store practice. It should not, however, be overdone. There is danger of wasting a great deal of time on the notebook. The aim of the instruction is not to make an elaborate notebook, but to drive home a lesson.

When department heads or other persons are called in to give information on a special topic, tactful prearrangement is important in order to avoid undesirable repetition of points previously established.

The social features of this class are important. An occasional party or exhibition of school work tends to establish helpful relations between the employers and the school. When the faithful service of the junior employees during the rush of holiday trade is later recognized by a party in the employees rest room, with simple refreshments furnished by the employers, with songs, recitations and essays by the pupils, with twenty minutes of dancing or games at the end, all concerned realize that they have simply put over another good lesson in store practice.

Co-ordinating or follow-up work is essential, in order that through inspection of the pupils at work and through interviews with their immediate superiors, the teacher may know the needs of individuals and of groups.

Course in Office Practice

1. *Aim.* To give specific vocational instruction for office positions of the kind held by junior employees.

2. *Content.* Relatively few of these pupils have office positions, but practically all of them are in line for promotion as soon as they

can qualify. In general the individual will profit more by receiving instruction on the requirements of several jobs, than by devoting all his time to the requirements of one job. For each type of work they need training.

- a. In developing manipulative skill.
- b. In acquiring information on methods of doing the work.
- c. In acquiring information on the relation of a given line of work to other lines in the same field.

These pupils in general are approaching sixteen years of age and the period of their enrollment in the continuation school is likely to be less than a year. It is advisable therefore to arrange the content of instruction in units of from four to six lessons on each position, so that at the end of the enrollment period each pupil will have completed definite units of training, and will be informed as to the opportunities for pursuing other units in evening school, correspondence school or business college.

- a. *Courses of the Clerical Type.* As much of the work as possible should be based on the actual forms used in local business houses, and on actual transactions.

(1) *General clerk.* Answer telephone; sort and arrange vouchers; prepare deposits and make them; prepare pay roll slips; copy contracts; typewrite form copy, trace railroad way bill; handle mail in and out; open and arrange mail; meet callers and learn wants; make notes and memoranda; check orders; make out bills; use city and telephone directory.

(2) *Shipping clerk.* Arrange with drawing teacher for special practice in lettering and marking goods for shipment. Check orders against invoices and receipts. Show how to check goods to see that all goods called for are in the shipment. Actual practice for the individual can be provided only through the use of dummy packages, or, better, by arranging for practice in the place of employment. A similar device applies to weighing shipments. Prepare freight bills, look up routes, record shipments made, mail shipment papers. Some instruction can be given on wrapping, boxing, and crating, but practice is needed on the actual material. Give practice on the use of the marking alphabet, labels, preparing signs. Study procedure on draft, bill of lading, parcel post.

(3) *Receiving and stock clerk.* Practical adaptations for instruction like those indicated for shipping clerk are needed as regards unpacking goods, noting condition of shipment, storing and delivering stock to departments. Give instruction on checking merchandise received against invoice; receipt for freight and express received, standard stock record forms and methods of keeping stock records

and making inventory; keeping stock room files. Study some transportation routes and traffic schedules and show how to find further information of this kind. Study shipping terms like consignor, consignee, consignment, common carrier, line, route, routed, waybill, F. O. B., bill of lading, demurrage, wharf receipt, clearing of custom house, etc.

(4) *File clerk.* Filing systems, vertical, flat, box, transfers. Card systems, numerical, alphabetical, subdivisions, geographical, by subject. Index guides, folders. Methods for letters, vouchers, reports. Classifying material for easy reference. Card indexes and cross reference files. Checks for material taken from files, transferring to "dead files." Importance, need of system, value of papers. Who may have access to files? Special methods for special purposes. Special practice on typewriting folios, labels and cards.

(5) *Mail clerk.* Post office regulations:—postage rates, special delivery information, registered mail requirements, classes of mail matter, times of regular collection and deliveries, times of closing mail for different directions, insurance charges, regulations and liability, parcel post zones, rates and regulations.

Method of opening mail, distributing mail; preparing originals and carbons for file clerk; handling enclosures both in and out; proper method of folding, enclosing in envelope or wrapper, sealing and stamping. Emphasis on neatness, carefulness, alertness; on confidential nature of mail.

Special individual instruction on letter press, addressograph, sealing and stamping machine.

(6) *Cashier.* Bank regulations:—Hours of opening and closing, deposit slips, arranging paper money right side up and according to denomination, arranging coins in rolls or envelopes, withdrawal slips arranged by denominations, indorsement and cashing of checks. Use of cash register. Examination of sales slip for form, items, legibility, agreement as to kind, number, price and total, correct address. Stamping of checks, receiving money, counting back change, balancing sales checks against cash register record. Filing charge orders.

Giving information and taking orders over the telephone. Courtesy to fellow clerks and customers.

Care of cash drawer, sales slips and cashier's cage. Need of accuracy, alertness, quickness, and attractive personal appearance.

(7) *Bookkeeper.* This course is for the small group of pupils previously mentioned who usually work for their fathers in a small store in which the volume of business does not require the full time of a regular bookkeeper. The aim is to give enough training to en-

able the pupil to keep a simple set of books. Many of them already have a slight knowledge of bookkeeping and desire help on special difficulties which arise in the course of their daily work.

Instead of using a textbook it is better to plan a series of Job Sheet lessons. Much time can be saved in compiling type transactions for these sheets by using some of the source material listed in the bibliography at the end of this section on Commercial Work.

Teachers should consult standard texts for model forms of journal and ledger, for functions of accounts, for guidance in analysis of ledger records, and for general mastery of detail.

Although in bookkeeping every transaction is first entered in the journal and then posted to the ledger, in teaching the preliminary principles of debit and credit it is better to use ruled ledger paper.

(a) Cash and merchandise accounts: Invent many cash transactions in buying and selling and drill until the pupils enter them correctly as debits or credits. Then use Job Sheet I—15 specified transactions in buying and selling merchandise. Record these properly on ledger paper. Then require the pupils to find total cost of merchandise bought, total price of merchandise sold, total cash received, total cash paid out.

(b) Expense account: Invent transactions involving stationery, postage, wages, light, heat, rent, labor, and drill until pupils can record them properly. Then Job Sheet 11-15 specified transactions involving Cash and Merchandise, and Expense items. Record these properly on ledger paper. Find total cost of merchandise bought, total expenses, total of cash paid out.

(c) Personal accounts: Similar drill involving names of persons who buy or sell; followed by a Job Sheet involving review to date. Find total price of merchandise sold, names of debtors and amounts due, names of creditors and amounts owed.

(d) Proprietor's account: Invent transactions and drill.

(e) Trial Balances: Explain heading, dates, and columns and take off trial balances for Job Sheets I, II, and III.

(f) Journal: Explain need of journal, explain arrangement of debts and credits, require full statement of transaction, and journalize Job Sheets I, II, and III.

(g) Posting: Number journal pages 1, 2, 3, etc.; ledger pages, 20, 21, 22, etc. Post in order of dates. Insist on rigid order (a) entry in ledger; (b) journal page in ledger; (c) ledger page in journal. Post Job Sheets I, II, and III. Take three trial balances.

(h) Review entire series by Job Sheet IV-30 transactions in a small retail business (coal, lumber, groceries). Use journal, ledger, and take trial balance. The accounts to be used are Proprietor's Merchandise, Expense, Personal and Cash. Some teachers will pre-

fer to record the 30 transactions in the form of cash book, sales book, and purchase book entries. The foregoing course in bookkeeping requires approximately 15 hours of instruction and drill. The course may be extended by similar instruction involving checks, notes, receipts, invoices, orders, deposit slips and statements.

b. *Courses of the Office Machine Type.*

(1) *Typist.* (a) Elementary unit for all members of the class. The function and proper handling of the parts of the machine,—keyboard, spacebar, ribbon, carriage, roller, paper centering and release. Care of the machine,—cleaning, oiling, changing ribbon. Proper position and touch. Memorize keyboard as soon as possible by typing. Follow standard drills. Type from written notes. Do not try for speed. Use of carbon paper. Address envelopes, fill in printed forms, make out bills.

(b) More advanced unit for those who need it. Practice for improvement in touch and fingering. Do not try for speed. Practice on simple letter forms, printed forms, and bills. Type checks, postal cards, catalog cards, telegrams. Cut stencils, use the hectograph ribbon and practice typing from dictaphone records.

The purpose of this instruction is not to develop typists since practically none of these pupils have as yet enough power in English to enable them to qualify as typists and stenographers. They can however satisfy a very proper desire on their part to take some type-writing as a try-out experience, with the understanding that they can pursue the study further in evening school or business college after they have made up deficiencies in English. For some of these pupils the work is strictly vocational since their purpose is not to become real typists but to acquire skill with the machine to meet the simple requirements of a particular position.

(2) *Duplicating Machine.* Give instruction in the use of the commonly used machines such as the hectograph, letter press, mimeograph and multigraph. A great deal of valuable instruction material for other classes can be duplicated. There are obvious advantages in having the pupils work on this material rather than on exercises which serve no useful purpose. Wherever possible, also, pupils should work on the partly printed forms like routing cards which are used in their places of employment. Enough practice should be given to insure ability to handle work on each machine.

(3) *Adding Machine.* Instruction on the operation and care of the machine, with enough practice to insure accuracy and speed. Information on the usefulness of the machine and of more complicated machines. Use material drawn from the offices represented.

(4) *Office Appliances.* Give practice on the use of check protectors, stamping and numbering machines, riveting devices.

(5) *Dictaphone.* This machine is so closely associated with speed stenography and speed typing that instruction for the continuation school pupil is practically limited to the care of the machine, inserting of records, careful handling of records, and shaving records. A few of the typists can profit by practice in transcribing records.

3. *Method.* Because of the need of having a variety of office machines combined with the necessity for avoiding excessive costs for equipment no school is likely to have more than one machine of each kind, with the exception of typewriters of which from two to six should be provided.

The courses are of two kinds:—

- a. The clerical type in which group instruction is effective.
- b. The machine type in which group instruction is possible only in explaining the general manipulation of the machine. Opportunity for practice for attaining manipulative skill is restricted to one pupil.

Instruction material for the clerical type can be planned as Unit Lessons for the class. That for the machine type should be laid out as single lessons under the Job Sheet plan, in order that each individual may stay on a machine until he has completed the unit for that machine.

During the first hour half the class can work as individuals on the machines and the other half work as a group on the clerical type lesson. During the second hour the groups reverse. Or it may be advisable to have the entire class take clerical work during one hour and machine work during the other. So much of the bookkeeping is an individual matter that the pupil or pupils taking it should carry on the work during the hour for machine instruction.

Some groups should be composed exclusively of boys, others of girls. The positions of shipping clerk, receiving clerk and stock clerk are rarely held by girls. On the other hand it is likely to be advisable to give to girls a course in filing much more extensive than that given to boys.

Use the typewriting machines as a kind of reservoir against congestion in the use of the other machines. Every member of this group needs to know enough about fingering and the mechanics of a typewriting machine to be able to write cards and labels, and to fill out printed forms.

After instruction has been given, check it by the use of definite problems, as—

Telephone: Get Mr. Smith of the Westinghouse Company on the line for me. The pupil must use the directory, get to the Westinghouse trunk line, get Mr. Smith, and then tell me than Mr. Smith is on the line.

Mailing: Find the cost of mailing a $2\frac{1}{2}$ oz. letter to Quebec. Find the cost of mailing a $1\frac{1}{2}$ lb. package to St. Louis.

Shipping: We have received an order from the Globe Mercantile Company, Cleveland, Ohio, for cotton goods, invoice \$356.75. They request that we ship the goods with draft for the amount attached to bill of lading.

Make out: 1, an order bill of lading covering the shipment; 2, the commercial draft attached; 3, the invoice. The shipment is in three cases weighing 160, 175, and 169 pounds. The classification is First Class and the rate is \$1.25 per hundred pounds.

Pupils should be trained not to attempt to use any machine or appliance until they have received instruction in its use. Printed directions and some instruction material are usually provided by the manufacturer. These can be supplemented if necessary by type-written directions. Direction sheets can be kept clean and whole if mounted on cardboard and covered with a coat of white shellac.

4. *Type Course.* As an aid to the teacher in compiling and presenting detail on the unit courses suggested a type course is herewith given.

Unit Course—Cashier. Instruction to pupil—You have been employed as cashier by Pure Food Grocery Co. It will be your duty to check all sales tickets; to receive payment for all goods sold; to keep a record of all cash received; to prove cash at the end of each half day; and to deposit at noon each day cash as directed by the manager. At the luncheon hour you will be relieved by another cashier who will act in your place while you are out. Fifteen minutes extra will be allowed for making the deposit.

You will report to the manager before leaving at noon exactly as you will at the close of the day. In the morning you will start with a certain amount of cash for change. All cash will be turned in at noon. Likewise, you will start in the afternoon with a certain amount of cash for change and report it all in at night. The cashier who relieves you at noon will start with cash for change that is charged to him and will report all cash in when he is relieved by you. In this way each will be held responsible for his own mistakes.

The transactions you are to handle are represented by sales tickets the data for which will be dictated to you by your teacher. The money to pay each ticket will accompany it. Check the ticket to

see that extensions are correct; make the proper change, putting it in an envelope marked "Customers"; put the money received in your cash drawer; and place the ticket on your spindle.

Monday A. M. October 10, 1921

Get from your teacher who is acting as store manager, the change you will need to start with. Count it carefully. You should have \$50.00 in the following denominations:

5	fives	.....	\$25.00
10	ones	.....	10.00
10	halves	.....	5.00
16	quarters	.....	4.00
30	dimes	.....	3.00
40	nickels	.....	2.00
100	pennies	.....	1.00

Give the manager a receipt for the \$50.00 received, using a receipt blank from your supplies.

Budget No. 1—10 sales tickets representing the morning's sales.

After disposing of these transactions as you were directed above, enter each ticket on a recapitulation record sheet which you will rule as follows:

Recapitulation of Sales

Cashier		Date			
Sale Number	Amount	Sale Number	Amount	Sale Number	Amount

Next prove your cash as follows: Total sales plus cash on hand at beginning equals cash in drawer at close of morning's business. Then make a report to the manager in the following form:

REPORT

Cashier

Date

Change in drawer 9 A. M.

\$50.00

Sales

Cash returned to Manager 12M.

Approved

Manager

The manager directs that you deposit the total amount received from the sales of the morning, keeping the \$50.00 change money in the denominations handed you at the beginning of the day. Count out this change money and put it in an envelope marked "Change." Make out a deposit ticket on a form furnished by the manager for this purpose. Take the money, deposit ticket, and bank book which will be handed you by the manager, to the bank and make the deposit. The manager will tell you where to make the deposit.

Monday P. M., October 10, 1921

Get change from the manager and receipt for it. Then proceed with Budget No. 2 which contains the afternoon's sales, exactly as you did with Budget No. 1. The order of procedure is as follows:

1. Check each ticket
2. Place it on the spindle
3. Make change
4. Recapitulate the P. M. sales
5. Prove cash
6. Make report to manager

Tuesday A. M., October 11, 1921

Budget No. 3, representing the sales of this half day will be handled like the two preceding budgets. Do not omit any steps. The manager directs that you deposit the money received yesterday P. M. and this A. M. keeping the usual change.

Tuesday P. M., October 11, 1921

Budget No. 4 represents the sales for this half day.

Wednesday P. M., October 12, 1921

Budget No. 5. After finishing your work for this half day deposit the cash taken in yesterday P. M. and this A. M. keeping out the usual \$50.00 in change.

Wednesday P. M., October 12, 1921

Budget No. 6. Proceed as before.

Supplies needed for this Unit (Per Pupil)

1. Instruction sheet (Mimeographed or printed)
2. Supply of "college currency" as follows: (High Schools)

2—twenties
2—tens
8—fives
3—twos
22—ones
13—halves
18—quarters
30—dimes
40—nickels
100—pennies

3. Cash drawer—Four spaces for bills, one each for halves, quarters, dimes, nickels, and pennies. (Get industrial department to make.)

4. Six receipt forms (Printed, mimeographed or written by pupil on blank paper.)

5. Sixty sales ticket forms (Mimeographed or printed) Stock books can be bought. Pupils will make out tickets from data dictated by the teacher. Six budgets of 10 sales each will be made up by the teacher. No pupil should be given a budget containing his own tickets. No checking of results will take place until the cashier receives the ticket.

6. Six recapitulation sheets. (Mimeographed, printed, or prepared by the pupil on blank sheets furnished.)

7. Six report forms (Ruled by pupil on paper furnished.)

8. Three deposit tickets (High School.)

9. Two legal size manila envelopes. (One the pupil will mark "Customers" and the other will mark "Change.")

10. Spindle.

Transactions for Budget No. 1 to be dictated by the teacher.

1.	1/2 doz. lemons	.40	5.00
	5 lbs. sugar	.07	
	2 doz. oranges	.75	
2.	6 cakes soap	.10	2.00
	1 lb. raisins	.30	
	1 lb. coffee	.28	
3.	1/2 lb. tea	.60	2.00
	5 lb. lard	.20	
	1 box Post Toasties	.15	
	2 lbs. oatmeal	.15	
4.	1 lb. English walnuts	.59	1.00
	2 lbs. cheese	.42	.50
5.	2 sacks flour	1.10	
	1/2 bu. potatoes	2.10	5.00
	6 doz. clothes pins	.08	
	2 boxes baking powder	.52	
6.	3 boxes saltines	.22	2.00
	2 cans bacon	.51	.50
	3 bags salt	.22	
7.	5 lbs. beans	.25	
	6 cans peas	.23	5.00
	3 doz. eggs	.55	
	1/2 doz. bananas	.60	
8.	1 qt. vinegar	.15	2.00
	2 qts. molasses	.15	
	1/2 bu. apples	3.00	
9.	3 cakes soap	.15	.50
	2 cakes sapolio	.14	.25
10.	3 qts. milk	.13	2.00
	1 loaf bread	.12	.50
	3 grape fruit	.15	
	1 clothesline	1.28	

G. *Detail on Prevocational or General Business Practice*

1. *Aim.* To give to pupils who are not prepared for technical commercial work information and practice on basic business procedure.

2. *Content.* The content should be selected chiefly from the outline on Special Business Information, with further selection from

the courses in Store Practice and in Office Practice according to local conditions. But instead of using the material chiefly to give information, it should be used both for information and for practice.

3. *Method*

a. One unit of the course can be taught by the extensive use of business forms. Each pupil needs a check book, bank book, deposit slips, receipt book, pad of bill heads, and payroll forms. If these are not available they can easily be ruled as needed by copying from any commercial arithmetic or textbook on business methods. Where a special form is needed, as for a post office money order, it can easily be obtained.

A folder is provided for each pupil and contains envelopes marked "Bank", "Bills", "Coin", etc.

The pupil conducts a business. He buys goods, pays by check, gives promissory notes, honors bills of lading with draft, gives receipts, deposits money. The teacher or one of the pupils is the banker. Each pupil makes out 15 itemized bills from as many different firms for goods purchased by another pupil. These bills are handed to the pupil concerned, and are numbered 1 to 15. Then the transactions begin.

(1) Deposit \$2240; \$2200 in bills, \$40 in coin. Enter deposit in check book.

(2) Pay bill No. 1. by check. Write the letter which goes with the check.

(3) Pay bill No. 2 by check.

(4) Write your ten day note for bill No. 3.

(5) Deposit \$265; \$260 in bills, \$5 in coin.

(6) Draw a ten day draft on Smith & Co., who owe you, in favor of the payee for bill No. 4.

(7) Pay by check your ten day note for bill No. 3. What is your bank balance now?

(8) Deposit \$1587; \$87 in checks, \$1410 in bills, \$90 in coin.

(9) Write a receipt for \$215 paid by John Doe. Deposit the check.

Write a check in payment of bill No. 5. What is your bank balance now?

In this manner the pupil obtains practice in the use of the ordinary business forms. Suitable transactions are suggested in the source material in the bibliography.

Other forms which do not lend themselves so readily to this method can be studied and filled out separately.

At all times have the pupils use printed or neatly ruled forms and carry on their transactions with neatness and accuracy.

Carry this type of work through a large part of the year. On some days especially when the plan is being introduced, the entire

time for the lesson will be devoted to this work, on other days only a few minutes, on other days this work will be omitted.

b. Meanwhile other phases of the work are presented by the following method:

Each section in the outline of the course in Business Practice suggests material for a unit course of two, three or four lessons. The expansion of the outline material into the lesson material is illustrated as follows:

Type Unit Course

Telephone Practice

References: Cahill & Ruggeri—Office Practice, pp. 114—140.

Lesson I

Have a detached telephone. Unscrew the cap from the receiver, pick off the diaphragm, gently let the core drop forward but do not remove it. Use blackboard diagrams. The receiver and transmitter work on the same principle.

How the telephone works. How sounds are transmitted. Vibrating function of the diaphragm. Compare with phonograph diaphragm. How a connection is made by the operator. Brief study of connections as made in a private branch exchange and in a large manual exchange. Effect of poor connection.

How to talk into a telephone. Refer to function of diaphragm. Suspend a metal plate or tin pie plate by a string. Contrast the clear ringing tone when it is tapped gently but decisively with a lead pencil, to the flat tone or the jangle when it is struck hard, or irregularly. Apply this fact to the tone and pitch of voice proper for the telephone. Contrast the effect of dragging the pencil to making a clean cut tap. Apply to importance of sounding final syllables in telephone conversation. Note how a trained public speaker, without undue emphasis, sounds the final syllables. The result is clearness of enunciation and courtesy of tone. Apply this to the business and social value of a clear voice, good enunciation, and courtesy of tone in all conversation.

Have the pupils tap the metal, pitch the voice, sound syllables. In like manner develop detail for the following lessons.

Lesson II

How to have a telephone installed. Kinds of phone service. How to notify company that telephone is out of order. What information can be obtained from a telephone directory.

How to place a local call. Getting a correct number, use of directory information service. Getting a particular party or department. Making emergency calls—fire, police, etc. How to remember phone numbers.

Lesson III

How to use a coin box telephone. How to place long distance calls. Two numbers, station-to-station, person-to-person, messenger call, appointment calls, reports, report charges, obtaining and using rates. How to answer a call. Courtesy, voice, time economy. Answering an incoming call for another person. Memorandum of calls for another person. How to handle telegrams by telephone, sending and receiving.

Lesson IV

How to use a telephone in a public station where attendants are on duty. How to operate intercommunicating systems and private branch exchanges in an emergency. How to handle telephone bills, charges, adjustments, and payment. Vocational opportunities in the telephone service.

In the foregoing unit, Lesson I suggest no transactions to be carried out by the pupil. But when Lesson II is presented have the pupils on that day handle this transaction:—

Fill out an application blank for telephone installation and clip to it your check for \$5.00 as a required deposit. Do you mail it?

Similarly, for Lesson IV following the instruction on how to handle telephone bills, the pupil is directed to carry on this transaction:—Verify correctness of charges and check telegrams and long distance calls listed on the telephone bill received. Then clip to it your check in payment, and mail it.

H. *Equipment*

1. *General.* Ink, red and black; rulers; erasers. Journal paper; ledger paper. Sets of business forms as issued by school supply houses. Supply of school money.

2. *Machines for a class of 15 pupils*

- 2 typewriters, with extra hectograph ribbons
- 1 small adding machine
- 1 large adding and listing machine
- 3 duplicating machines one of letter press type, one of hectograph type, one of mimeograph or neostyle type with supply of stencils.
- 1 cash register
- 1 telephone switchboard
- 1 riveting appliance
- 1 stapling appliance
- 1 numbering stamp

- 1 check protector
 - 1 stamping appliance
 - 1 filing case with enough sections to provide vertical and horizontal compartments, drawers for material 10 by 12, 5 by 8, 4 by 6, 3 by 5. Index guides,—alphabetical for single letter, 40 and 80 subdivisions, sizes to fit drawers; blanks for additional guides; cards of same sizes; folders; transfer boxes.
 - 1 filing section of visible file of type used locally
3. *Desirable additional machines*
- Additional typewriters up to 6 or 8
 - Calculating machine
 - Dictaphone with accessories for recutting records and transcribing
 - Addressing, sealing, and stamping machine

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XIII. HOME ECONOMICS

A. *Aims*:—The aims of home economics instruction in the continuation school are to train the pupils in those habits and attitudes of mind which help them to meet the demands for satisfactory work in this field, whether the work be done by the pupils for themselves or for others. These demands are:—

- 1 Skill and increasing accuracy
- 2 Thinking and planning
- 3 Pride in work well done
- 4 Ambition to improve work.
- 5 Profiting by mistakes and not repeating the same ones,—being willing to learn.
- 6 Ability to secure loyal co-operation from necessary helpers.
- 7 Honesty in producing a product that will be the best of its kind for the cost.

B. *Types of Home Economics*: Several types of home economics should be offered in continuation schools. First, courses in home economics should be given to girls as part of their general education. The aims of these should be to provide education and training which will enable these girls to live happier and more helpful lives in their homes; to enable them to take their rightful places as members of family groups and as members of society. These courses should contribute to their all around development and should lay the foundation for later vocational training. Second, courses in home economics should be given for guidance purposes, or for prevocational training, since many of these girls may have special ability for following one or more of the commercial occupations which have evolved from the arts of the household. They may desire and have special aptitudes to become household assistants. Courses of study in home economics should provide an opportunity for them to test out their capacities and aptitudes and be guided into those lines of work for which they are best fitted. Third, courses in home economics should be given which are vocational in nature and which should be planned specially for gaining efficiency in the activities in the home. Courses such as these should be planned for the continuation school girls who are employed as household assistants and who desire to add to their vocational competency.

C. *Classification of Pupils*: In larger schools it is possible to classify the pupils into groups which have had little or no instruction

in home economics in the grades, and those which have had previous instruction and are capable of slightly more advanced work. In like manner, all the girls who have domestic permits can be assigned to one class and receive instruction in home making which will be supplementary to daily employment, or for general appreciation or personal service purposes. In grouping pupils their present occupations as well as their future occupations should be considered.

To secure best results, groups or classes should approximate sixteen in number. This is especially true if it is necessary to have mixed classes and if there are groups in which it is necessary to give a large amount of individual instruction.

D. *Time Allotment*: A minimum of 25% of the time spent by girls in continuation schools should be devoted to this work under a home economics teacher. For intensive work in home economics this time allotment should be increased to 50% of the total weekly school time. This is especially to be recommended for girls who have domestic service permits and who desire to take courses carefully designed to increase their vocational competency as household assistants. It is also to be recommended for girls who must carry a large amount of home responsibility during the hours when they are not at their places of daily employment.

E. *Attitude of Pupils*: Although most of these girls, either consciously or unconsciously, expect to be married within a few years, their immediate aim is not toward the vocation of home making. They are interested in home economics instruction chiefly for what it can do for them personally in helping them to buy or make clothes or prepare foods which keep them well, and to save money directly or through the purchase of bargains.

F. *Content of Courses*: In planning courses of study in home economics for continuation school girls certain facts, characteristic of the group, must be taken into consideration. These girls spend the major portion of their days at their places of employment. The amount of time which they spend in their homes and the consequent amount of time they can devote to home practice is relatively small.

The groups are constantly changing as new pupils enter who have attained the age of fourteen, and as those who have become sixteen drop out. These and other influencing factors make it imperative that the content of courses of study in home economics be very carefully selected to meet in so far as possible the specific needs of each individual girl enrolled.

Since the total number of hours available for home economics instruction is small—in some cases 144 hours per year and in

others 72 hours—it is necessary to plan to make each day's instruction purposeful and complete, and at the same time to arrange for definite progression in a series whether it be for general improvement, special vocational training for entrance to an occupation, or for promotion.

To meet these requirements the work should be organized in short units. Each unit course should cover a definite phase of the subject for a definite group. The subject of home economics may be divided into three fields, (a) Food, (b) Clothing, (c) The Home and the Family. Many unit courses may be organized under each field, depending upon the needs of the various groups of girls to be served. For example, in the field of clothing short units may be organized under the following heads:—

The selection and purchase of ready made clothing; the selection and purchase of dress accessories; the construction of wash waists and dresses; the remodeling of woolen garments;

The care, repair and renovation of woolen garments; the construction of undergarments; good taste in business dress, and many others. The needs of the groups in a given continuation school should determine the units that should be offered and the content of the various units offered.

Each unit of work should be resolved into a series of projects which the girls can carry, and which will definitely function in the daily life activities of the girls. The immediate needs of the girls should be considered rather than their remote needs. The projects should be selected because of genuinely felt needs, because of a personal realization of the worth of a project. With the limited amount of time available for instruction and practice no great degree of manipulative skill can be obtained, and no great material output can be expected. In the contacts which these girls have with the work-a-day world, they soon grow to expect to see results quickly, and it is usually inadvisable to include projects the performance of which will extend over a long period of weeks.

It is important that the instructional content emphasize methods of planning, methods of work, methods of manipulation, the formation of habits which will enable pupils to perform successive operations quickly and efficiently, the developing of standards, attitudes and appreciations, the acquiring of knowledge and information. It should put the pupils in touch with source material for meeting present needs, and help them to know how and where to seek source material for meeting problems with which they may be confronted in later years when they meet the full responsibility of home making.

Job analysis or working plans should be made by breaking up each project into a series of standard operations that must be performed in completing a project. Discussions during the class period should set forth the methods of performing operations, the reasons for using various methods of performance, and other technical and practical information about the respective operations performed. It is suggested that no definite allotment of time be made for related work. Principles of science and art will be much better understood and much more usable if closely connected with their applications, to specific problems which these girls must meet and solve. This should not be interpreted to imply that their home economics teacher should give instruction in all material related to home economics. There should be close co-operation between home economics teachers and academic teachers, for there is much material in art, civics, hygiene, English, geography, mathematics and other subjects that can profitably be related to home economics work, and which should be given by the academic teachers.

Because of the ever changing groups of girls in the continuation school and the consequent change in the needs of the groups, there should be corresponding changes in the content of courses and in the units of work offered. No courses of study in home economics should be regarded even as relatively permanent in continuation school. The outlines of courses of study which follow are therefore presented as suggestions of a general nature rather than as detailed specifications.

In planning any lesson the teacher will find that projects in home economics for continuation school girls are likely to involve instruction along these lines:

1. Some phase of planning, selection, or purchase.
2. Manipulation leading to preparation or construction.
3. A proper method of serving, of using, or of wearing.
4. Methods of preservation, storage, repair, or cleaning.
5. Auxiliary information involving usually science, art, hygiene or future sources of information.
6. A problem in finance involving the personal budget, the home budget, or both.
7. Personal attitude or relations on the part of the girl, either towards the project or towards the other members of her family in connection with the project.

G. *Suggestive Outline of Lesson Plan:* All the items in the following lesson have value, perhaps equal value, for the continuation school girl. But it is not possible in the time assigned to home economics, to give all the instruction suggested here. Nevertheless in laying out the course for each school, the type lesson plan should be used as a

model and the instructional content on each project should be analyzed and assembled.

Then the teacher should make wise selection according to the needs and capacities of the pupils, and according to the local possibilities for having much of the related and informational material presented by other teachers.

Type Lesson Plan

UnitPreparation of Breakfast

Lesson No. 2 Breakfast cereals

Material Typical breakfast foods. Some
left over cereal.

1. Planning, selection, and purchase:
Display amount of typical breakfast foods which are equivalent in food value and the cost of each. In discussing cost consider sanitary package goods and goods sold from bulk which may be insanitary or inferior in quality.
Compare food values of cooked and uncooked cereals; relative costs; personal preferences.
Discuss variety versus same cereal each morning.
2. Preparation:
Have members of the class prepare several breakfast cereals.
3. Serving: Discuss selection of proper dishes for serving, serving with fruit, cream versus milk as an item of serving.
4. Cleansing: When the cooking dish is emptied, fill with warm water to facilitate later dish washing.
Preservation: Store in ice chest. Can be reheated and served as cereal, set in molds and served cold with fruit as desert; used as basis for puddings; used as thickening for soups, gravies or stews; added to dressing for meat filling; used in muffins or griddle cakes; in escalloped dishes or baked croquettes; served with syrup or fruit sauce.
5. Auxiliary information: Importance of cereal in diet. Comparative food value of typical breakfast foods. Method of preparation from grains. Costs. Methods of cooking.
6. Budget: The relative cost and nutritive value of cereals compared with other breakfast foods. The choice and purchase of cereals by the girl who rooms alone.
7. Personal relations: The hot cereal breakfast with milk in contrast to letting each child take a piece of dry bread and eat it on the side walk. Is it advisable to make any change in home breakfasts? Who is responsible for cooking the cereal the night before? Importance of starting the day with an adequate breakfast.

References:

Federal Board Bulletin No. 35

Willard & Gillett, 104-108

Matthews, pp. 192-193

8. Sources of Information: This lesson has an immediate application in the daily life of the pupil. Even more important is the application at a later period in her life. Supplement the lesson by having the pupils look up "cereals" in some or all of the following references—read and discuss.

References:—

Willard & GillettDietetics for High Schools

BaileyDomestic Science

Cooley & SpohrHousehold Arts for Home and
School

BalderstonHousewifery

GreerTextbook of Cooking

Dowd & JamesonFood and its Preparation

Good homemaking involves the use of more than a book of recipes for cooking. Pupils should be trained in the use of standard books on home economics. This training involves knowledge of the existence of such books; the development of the habit of consulting them, of skill in the use of the index, of thoughtful discussion of the ideas presented in them; and of the practical adaptation of those ideas to the girl's personal problems. This phase of home economics instruction is so important that it should be a part of every lesson. Coordination with teachers of other subjects is essential.

9. This lesson can be extended so as to take in the following:

Related Geography. The growth, marketing and preparation of cereal products.

Related Hygiene. Cereals as an important item in healthful diet. The effect of a cheerful frame of mind at breakfast on starting the day right.

Related Arithmetic. Adapt recipes intended to furnish enough cereal for three people to furnish enough for five, and vice versa.

Related Art. Amplify the art of serving; design and utility in dishes and table decoration.

H. *Outlines of Courses*

1. *Outline the Suggestive Courses on the Selection, Care and Construction of Clothing.*

The aim of the teacher is to give instruction in fundamentals. The desire of the pupil is to complete a well made and well fitting article as soon as possible. The more the teacher is able to plan work

so as to achieve the aim of instruction and at the same time to meet the desire of the pupil, the more satisfactory will the course be.

Let the time in school be devoted to receiving instruction rather than in repetitive tasks. (Specifically avoid having the pupils spend school time in knitting and crocheting in which they already have skill). Encourage them to do such work at home, to bring the product to school, and to receive instruction on how to work the product into a school or home project.

a. Unit. Clothing Construction.

- (1) Preliminary: On each project discuss the use of the garment; types of that garment; suitable material; design, measurement and procuring of pattern; comparison with ready made garment; amount and cost of material and findings; instruction for purchase and shrinkage of materials.
- (2) Cutting out and fitting:—Interpret pattern; test and if necessary alter pattern; try placing pattern for economy in cutting; allowance for seams and hems; cutting, fitting and altering.
- (3) Construction: Do all work by the shortest method. That is, instruct in machine operation from the beginning and always use the machine in preference to hand sewing. Teach basting stitch, plain seam and French seam, running, back, and combination stitching; hemmed fell and stitched fell: facing; gathering; other fundamental operations.
- (4) Instruction on machine. Demonstrate cleaning, oiling, general care; practice treading with thread removed from eye of needle; practice stitching on paper without thread until able to run a straight line; practice threading; wind and insert bobbin; stitch on cloth.
- (5) Projects: Aprons, plain, three piece, bungalow type, blouse, bloomers, chemise, cookery caps, kimona, nightdress, one-piece washable dress, party dress, shirt waist, skirts, sleevelets, undergarments, children's clothes.

In addition it is advisable to instruct the pupils in the making of many simple articles. This practice not only satisfies the desire of the pupils to progress rapidly through some projects, but also gives much valuable practice in repetition or review. In addition, it extends the home project work of the pupils. Specifically:—let pupils crochet or knit at home a nightgown or camisole top, and insert it in school.

Bramley collars, collar and cuff sets, articles for gifts, patchwork for quilts as a class project, bedroom slippers, crocheted drawstrings instead of ribbons for undergarments, decorated house aprons, table runners, loose stitch knit scarf, a closely knit sweater, handkerchiefs.

with drawn threads, knots of ribbon, organdie flowers for belts and hats, are projects of this type. In general select articles which are attractive, interesting, small, low in cost, and productive of basic manipulative skill.

b Unit. General Care of Clothing.

- (1) General: Reasons of economy, cleanliness, comfort, appearance. Proper airing of clothes in daily use. Care of coats, suits, dresses, etc. Brushing; removing spots; replacing buttons, hooks and eyes; pressing.
- (2) Storage of Clothing: Arrangement in closets, drawers, chests, etc. Methods of folding and storing between seasons, protection from moths. Commercial cleaning establishments.
- (3) Care of Shoes: Cleansing, brushing, polishing, white shoes. Overshoes as a health measure; to preserve shoes. Repairs.
- (4) Patching and Darning: The hemmed patch for underwear, aprons, boys' shirts, house furnishings. The stitched patch for overalls, jumpers, coats. Darning. The plain darn for stockings, the straight, three cornered, and diagonal darn.
- (5) Remodeling. Type projects: From a man's shirt construct an apron, a child's kimona type dress, or rompers. Lengthen or shorten skirts. Remodel skirts or dresses to meet changes of style, especially at neck, waist-line and bottom. Re-foot stockings for children.

c Unit. Ready-made Garments.

- (1) The Clothing Budget: Discuss the importance of such a budget. Reasons for attempting to cover three years in advance. Discussion of a type budget. For instance:—
 Hats, coat, suit, sweater, shirt waists .. 53 per cent
 Negligees, underwear, corsets 14 per cent
 Shoes, hosiery, rubbers, umbrella 20 per cent
 Gloves, neckwear, sundries 13 per cent
 Simplify this to meet the case of girls in the class. What to make and what to buy.
- (2) The Choice of Dress:—Appropriateness, color harmony, design, comfort, durability.
- (3) Tests for Quality:—Examine samples of wool and silk for weight, texture, "feel." Fray cut threads and burn them. Wool and silk smell like burnt feathers, cotton and linen like burnt paper. Durability in color. Durability in stitches, seams, and the body of the cloth. Linings.
- (4) When and Where to Buy:—Bargain sales, real and otherwise. The reputation of the store. Seasonal sales. The

value of the shopping habit, knowledge of current costs, wearing qualities, shrinkage and fading.

- (5) Hygienic Qualities of Clothing:—Purchasing for cleanliness. Purchasing for warmth. Choice of underwear, stockings, shoes.
- (6) Some Economic Considerations: When is a garment really cheap in price? Sweatshop goods. Frequent style changes. Careful comparative study of advertisements. Shop for examination of higher priced goods to get ideas on quality.

d Unit. Infant's Clothing.

(1) Types and Number of Garments Needed.

- (a) Discussion of purchase and making of layette:—Flannel bands, 3; knit bands, 3; knit shirts, 3; diapers, 3-6 dozen; flannel petticoats, 4; cotton petticoats, 4; dresses or plain slips, 8; nightgowns, 3; kimono wrappers, 2; socks, 3 pairs; small blankets, 3; bed coverings and bath accessories. Emphasize plainness of construction and ease of laundering.

(2) Undergarments.

- (a) Purpose, use, and care of knitted articles.
- (b) Method of making and placing abdominal band.
- (c) Flannel petticoat, length 26 inches. Pattern, cut, mark, baste. Teach flannel fell for underarm seams. Finish edges at bottom, neck, and armholes by turning edge once and catch, stitch to place.
- (d) Close shoulder with tapes.
- (e) Cotton petticoats: Same size and pattern. Seams, hemmed or stitched fell; edge finish neck and armholes, one-quarter inch hemmed by hand, lower edge finish two inch hem by machine, shoulder closing, same as flannel petticoat.
- (f) Care of flannel and cotton petticoats.

(3) Dress or Slip and Nightdress.

- (a) Dress 27 inches, nightdress 36 inches.
- (b) Seams: underarm, shoulder, and armhole, hemmed or stitched fell with flat finish.
- (c) Placket: bound and faced; small flat pearl buttons, buttonholes, horizontal, round end.
- (d) Neck and cuff finish:—Binding one-half inch finished, loose fit.

- (e) Hem: two inches for dress, one inch for nightdress with tape run through.
 - (f) Care of garments: launder when used once. Use only white soap, no starch or bluing, and rinse thoroughly.
- (4) Kimono Wrappers and Blankets.
- (a) Cut and mark pattern.
 - (b) Seams: baste and overcast.
 - (c) Finish at neck, cuffs, and front openings. Cut bands of same material two inches wide. Turn edges of kimono to right side, baste band flat with raw edges turned under and the edge of the kimono and the edge of band even. Sew flat.
 - (d) Hem, two inches.
 - (e) Fastenings, use tapes.
 - (f) Blankets, made from one yard of flannel bound on the edges.

e. Unit. Construction and Trimming of Hats.

Seasonal unit. May be limited to making of one hat in fall and spring, or may be expanded to a year's work or more. To cover this unit with one average hat suitable for continuation school girls requires from four to eight lessons.

Section 1. Study of Hat.

- (a) Parts of the hat:—Brim, upper and under; crown, top and side; lining, crown tip and side crown.
- (b) Terms:—Head size, facing, binding, trimming, edge-wire, base of crown.
- (c) Measure and record measurements.

Section 2. Selection of Type.

- (a) Frames, one piece or two piece.
- (b) Frame material:—buckram, wire.
- (c) Trimming:—ribbons, flowers, feathers.
- (d) Purchase of frame and trimmings.

Section 3. Shaping the Hat.

- (a) Types of shapes,—Sailors, turbans, toques, bonnets, etc. Illustrating measure and record measurement.
- (b) Types of brim,—Regulation, straight, drooping, mushroom, rolling. Shaping and measurement.

- (c) Types of crowns,—Square, sloping, round, dome, bell, tam-o' shanter, shaping and measurement.

Section 4. Placing the Trimming.

- (a) Types of stitches:—Back, running, slip, lacing, sadder's feather.
 (b) Terms,—Facings, plain, shirred, bias; ruffles; plaits, folds, straight, crosswise, bias, plain, French, milliners; tucks.
 (c) Placing the trimming.

f. Unit. Laundering

Although for the sake of clearness and convenience laundering is here presented as a unit, in very few schools will it be taught as a unit. The value of this instruction is measured chiefly as it functions in the home. Yet it is practically impossible to reproduce the conditions of family laundry in the school. In the home the family wash is a weekly institution; in the schools the time to launder articles is when they need to be laundered.

Practical laundry work in the school will come when the table linen needs to be prepared for a luncheon. When dress material is to be shrunk or pressed or when the housework in a model apartment brings a need for such work. Much of the informational part of the work can be given in connection with planning the purchase of sewing material. Already these girls know a great deal about the family laundry. One of the most important tasks for the teacher is to organize that knowledge in order that it may result in helpful activity at home.

(1) Basic Information

Getting the laundry ready:—Proper storage at home. Gathering and sorting. Preparation of water and tubs. Preliminary soaking. Importance of having tubs at proper height. Preparation of washing, rinsing, and bluing water. Special treatment of hard water.

The washing:—Order in which sorted piles are washed. Variation in use of hot water to avoid shrinkage and fading. Boiling clothes for removal of dirt and for sterilization. Rinsing, bluing, wringing out. Starching.

The drying:—Importance of sunshine. Proper methods of hanging clothes on line. Method of taking down and sorting. Dampen and roll.

The ironing:—Proper ironing board, and adjustment to height. Proper heat of iron, use of beeswax. Points on starching, ironing, and folding special articles as table linen, bed linen, shirts, etc.

Laundering appliances:—The method of operating the more com-

mon appliances;—regulation of coal and gas ranges; the ordinary iron, gas iron, electric iron; the washing machine, hand power, water power, electric power; other special machines.

(2) Demonstration or Practice in School.

In general, washing, hanging, and drying, one type of clothing is presented one week, and dampening, folding, and ironing the next week. Obviously each type may be subdivided according to available time and equipment. Suggested types:—Boiled cottons, napery and linen, colored cottons and linens, woollens and flannels, fine fabrics for hand washing. Removal of stains on each type as it is handled.

2. *Outline of Suggestive Courses on the Use and Preparation of Food.*

a. Unit. Related Information.

The information suggested in this unit should be studied not necessarily in the sequence in which it is given here, but as it can be profitably related to the specific projects of the pupils. Only a very elementary presentation of this material will be understood by the pupils.

(1) The body needs food:—For growth and health; for fuel; for rebuilding; for regulating processes of body. Each day the body requires food from each of these classes:—Fruits and vegetables; meat, poultry, fish, eggs, cheese, milk; cereals (including bread and baked goods) and legumes; sugar and other sweets; butter, cream, and other fats.

(2) Fuel needs of the body:—

(a) Heat or energy is needed for circulation, respiration, digestion, etc., to carry on work of standing, housework, etc.; for warmth.

(b) Food for fuel is derived from starch, sugar, and fats.

(c) Effect of too much or too little fuel.

(3) The protein requirement:—The functions of protein are to supply nutrition necessary for growth and to replace tissue. The amount of protein needed varies with age and size; is not changed by amount of exercise.

Foods providing protein do so completely, as meat, fish, eggs, milk, etc.; or incompletely, as dried beans or peas, and cereals.

(4) Mineral matter in foods:—It is important for growth and repair.

Foods rich in each mineral are:—in calcium, milk, eggs, fruits, vegetables; in phosphorus, milk, eggs, some cereals, leafy vegetables; in iron, green vegetables, dried fruits, eggs, and meat.

The importance of eating plenty of milk, eggs, and leafy vegetables.

- (5) An adequate diet requires:—Foods furnishing necessary “fat soluble” and “water soluble”; food furnishing necessary minerals and acids; laxative foods; water; the daily requirement in calories.
- (6) Food for a school child:—Eat at regular intervals and not between meals. Drink enough water at the right times. Eat what is served. Do not form the habit of “disliking” cereals or vegetables, or any other wholesome food. At meal time be cheerful, avoid anger, grief, or embarrassment. Be wise in the use of tea, coffee, fried foods, rich pastries, etc. Drink milk. Eat bread and butter, eggs, vegetables. Apply the previous lessons to your own diet. Eat plenty. Continuation school pupils are at the age when they require plenty of nourishing food. Be especially careful concerning the lunch carried from home.
- (7) Simple standards of living:—It is wise to avoid competition and a desire for show. A simple standard does not imply lack of dignity, refinement, nourishment or attractiveness in meals. Learn to buy in quantities suited to the needs of the family. Avoid waste. Watch the garbage pail. Use left-overs.
- (8) Fuel savings:—Cost of fuel, coal and gas. Care of stoves and ranges for effective cooking, regulation of gas flame. Care of stoves and ranges for cleanliness. Safety precautions with coal and gas. Cooking utensils designed for fuel economy. The fireless cooker.
- (9) Marketing:—The food budget with reference to total income and size of family. Planning the food allowance and keeping accounts. Selection of market—prices, delivery, quality of goods, sanitation. Preservation of eggs by water glass method. Marketing in person, by telephone. Relation of purchasing to home storage conditions. Bulk goods versus package goods as regards cleanliness. The selection of meat. Ready-to-serve food. Weights and measures. Honest measure. The checking of deliveries and charge accounts.
- (10) The lunch basket:—Desirability of one hot dish with cold lunch. Lunch for school children. Lunch for father. Cleanliness and attractiveness of container. The lunch of the working girl.
- (11) Table manners:—Good manners mean sensible and unoffending actions. Proper method of being seated. Use of napkin, knife, fork, spoon. Avoidance of unpleasant noise. Proper topics of conversation. Proper posture. Proper method of leaving the table.

b. Unit. The Breakfast.

- (1) Show the cooking room to the girls and instruct them how to work in it. Organize for personal appearance, hands, hair, uniforms, etc., for preliminary preparation, dish washing, and housekeeper duties. General introduction on aims and methods of the course. Stress on application of work at home and arrangement for reports on such application as preliminary to each lesson.
- (2) Plan the instruction over a period of four or five lessons so that at the end of that time the pupils can plan, prepare, and serve a breakfast.

<i>Light</i>	<i>Medium</i>	<i>Heavy</i>
Fruit	Fruit	Fruit
Cereal	Cereal	Cereal
Beverage	Bread and Butter (Toast)	Eggs or Bacon Bread (Toast)
	Beverage	Beverage

- (3) This involves a selection from such projects as the following:

Fruit:—Fresh, stewed prunes or apricots, coddled apples;
Cereals:—Cream of wheat with or without raisins; rolled oats; ready to serve cereals.

Beverages:—Cocoa or coffee.

Eggs:—Boiled, coddled, scrambled, on toast, omelette.

Bacon:—Fried.

c. Unit. The Lunch or Supper.

- (1) Plan the instruction over a period of six or seven lessons. so that at the end of that time the pupils can plan, prepare, and serve a luncheon or supper.
 - (a) A one-dish meal, cocoa, pudding.
 - (b) Omelette, baked potato, green vegetable, stewed fruit.
 - (c) Salad, thin bread, and butter, iced tea, fresh fruit.

- (2) This involves a selection from such projects as the following:—

Beverages:—Tea, cocoa.

Liquid and flour in soups, sauces and puddings, as cream of corn soup; cream toast; creamed chipped beef or codfish; chocolate corn-starch pudding.

Milk and egg dishes, as soft custard; baked custard; custard pie.

Vegetables, as baked or boiled potatoes; mashed potatoes; potato hash; creamed onions or carrots; escalloped potatoes.

The one dish meal, as Spanish rice; baked macaroni and cheese; macaroni and tomatoes; casserole of rice and meat.

Salads, as fruit, vegetable, meat, cheese, egg, fish, nut. Salad dressings, as sour, sweet, oil and vinegar, mayonnaise.

d Unit. The Dinner.

- (1) Plan the instruction over a period of seven to ten lessons so that at the end of that time the pupils can plan, prepare, and serve a simple dinner, as:—Cream of corn soup, baked potatoes, pan broiled chops, green vegetable, baking powder biscuit, baked custard, beverage.
- (2) This involves a selection from some projects which have been previously taught, or from the following.
Quick breads, as plain muffins; bran muffins; popovers; waffles, griddle cakes; baking powder biscuit; short cake.
Meats, as Hamburg steak; pan broiled chops; steamed frankfurts.
Cakes and cookies, as sugar cookies; chocolate cookies with or without nuts; sponge cake; butter cake; plain or frosted chocolate cake.

e Unit. Other Projects.

- (1) Cheese:—Baked cheese on toast; cheese omelette; cottage cheese in sandwiches with nuts, jelly, raisins, figs, dates, or lettuce.
- (2) Sugars and sweets:—chocolate fudge; peanut brittle; divinity fudge. Thread, soft ball, hard ball, crack, and caramel stages in candy making.
- (3) Yeast Breads:—
Preliminary:—Yeast as a leavening agent. Selection of flour. Setting of sponge and raising of dough. Baking temperature. Care of bread after cooking.
Preparation:—The teacher has the sponge prepared for the first class of the week. Thereafter each class prepares the sponge for the next day's class. Bake either as loaves or biscuits.
- (4) Canning and preserving:—According to season preserve fruits and vegetables which can be stored and used later, either at home or in the school.

f. Unit. Food for Invalids.

- (1) Standard Dishes:—During this and the following lessons prepare dishes selected from the following dietaries for the sick.
Liquid foods:—Broths, beef extract, beef tea, milk, gruels,

eggnog, cream soups, cocoa, fruit juice.

Soft foods:—Soft cooked eggs, milk toast, junket, cooked custards, jellies.

Solid foods:—Eggs, cream toast, asparagus, baked custards, tender chicken, oysters, creamed sweet-breads.

Diet should be light but nourishing, and attractive.

- (2) The Invalid's Tray:—Do not have too great variety of food on the tray. Serve small portions. Have all foods well cooked and absolutely clean linen. Usually a flower on the tray makes it more attractive. Use a tray of medium size. Usually the rectangular shape is preferable. Serve the hot foods hot, and the cold foods cold. Do not ask the invalid what is wanted. Let the tray be a surprise. Remove the tray and used dishes as soon as the patient has finished.

- (3) Special Diet for Tubercular Persons.

Need of plenty of nourishing, easily digested food, with fresh air, sleep, and absence of worry. Importance of causing gain in weight. Diet, quantities, and time schedule. Importance of guidance of physician.

g. Unit. Food for Infants.

- (1) Basic Principles:—Times of feeding and importance of regularity. Intervals between meals. Advantages of mother's milk. Precautions for keeping up supply of milk. Preventable infant mortality. Regular gain in weight and other evidences of proper feeding.
- (2) Supplementing Mother's Milk:—Importance of guidance from specialist. Danger of unscientific practices and beliefs. Cow's milk the best substitute. Calculate volume of food needed per day. Composition:—Milk, water, sugar. Distinguish dextrimaltose, lactose, cane sugar.
- (3) Preparation:—Make up at one time enough for a day. Absolute precision of measurement. Complete sterilizing of utensils and water used, feeding bottles and nipples. Importance of keeping on ice and of stoppering container, with sterile stoppers of cotton or card board. Practice in measuring, mixing, pasteurizing.
- (4) Feeding.
Use bottle with short neck, round corners, thoroughly cleaned with warm soapy water and brush, and then sterilized by boiling. Similar care of nipples.
Mix food thoroughly and measure into feeding bottle with absolute precision. Return carefully stoppered containers to refrigerator.
Warm feeding bottle and contents to correct temperature

in hot water. Shake frequently to insure even temperature. Be sure liquid flows neither too slow nor too fast through the nipple.

(5) Modification of Diet.

Do not experiment. Get advice from one who knows modern methods. Use of lime water, fruit juice. Normal rate of gain in weight. Normal time for beginning introduction of other food. Use of infant's foods other than milk.

(6) Feeding Young Children:—Need of utmost care does not cease when baby is weaned. Age from two to six years has been called the most neglected period of childhood. Proper articles of diet, according to age. Importance of cleanliness, fresh air, plenty of sleep.

(7) The School Cafeteria—Optional

In some schools the continuation school girls prepare hot dishes for the school cafeteria to supplement the lunches of the pupils. Sometimes a group of first and second grade children goes to the cafeteria for a mid-morning lunch. The instructional content in this commendable work should always be developed. An extension of the same instruction can be made to apply to the use of hot dishes in the cafeterias in the factories where the pupils are employed.

3. *Outline of Suggestive Courses on the Care and Management of the Home and Family.*

a Unit. Home Care

Continuation school girls spend their days in employment away from home. Lack of time and physical weariness combine to make it difficult for them to carry on extensive home projects growing out of their instruction in school. Yet unless they do apply their instruction at home there is danger that the course may become merely a discussion of things which ought to be done. The teacher should be alert to give sympathetic encouragement to what might seem only a slight activity at home. These girls are carrying a full burden of responsibility in employment. The little which they are able to do in addition at home should receive due credit.

(1) Household Management: — Definition; home making a highly specialized industry; need for knowledge of household management; knowledge of housewife; rules, standards, variables.

(2) The Home:—Basic principles upon which to build a home; false standards of living; points to consider in selecting a house; points to consider in selecting the location of a

house; own home vs. apartment; city home vs. suburban home; financing a home, viz., Building and Loan Association.

- (3) The Home:—House rent includes; apartment rent includes; pride in appearance of yard and surroundings.
- (4) Cleaning:—Bed-room airing, and ventilating of room; cleaning of bed; making of bed; care of dresser and personal belongings; care of floor; encourage girls to assume care of own room.
- (5) Cleaning:—Methods and hygiene; rules for cleaning a room; dustless sweeping; dusting; cleaning of walls; here and in later lessons, some girls can assume a definite home responsibility.
- (6) Cleaning:—Bath room fixtures; cleaning and care of refrigerator.
- (7) Efficient Kitchen:—Definition; arrangement; care.
- (8) Household Furnishings:—Floors; floor coverings; walls; draperies.
- (9) Household Furnishings:—Furniture; furnishing of rooms; household plumbing; household plumbing fixtures.
- (10) Lease:—Definition; terms of lease; meaning of lease; general provisions of lease.
- (11) Budget:—Definition; object; how to keep budget; factors to be considered in apportioning an income; division of family budget and personal budget; keeping of personal budget for one month.
- (12) Clothing:—Clothing expenditures; factors to be considered in planning clothing expenditure; factors which will reduce clothing expenditure; false standards of dress; standardization of dress.
- (13) Food:—Needs of the body; food principles found in food; rules to follow in selection of food; food economy; waste; marketing; keeping account of good health habits for one month.
- (14) Lighting Systems:—Proper location of lights; care of fixtures; repairs; proper economy.
- (15) Heating Systems:—Study of principles of heating; care of system.

b Unit. Home Nursing and Hygiene.

- (1) Causes and prevention of sickness:—Communicable diseases, bacteria and other micro-organisms; defenses of the body.
- (2) Health and the home:—Ventilation; lighting; cleanliness;

garbage; insects; sewage; elimination; rest and fatigue; sleep; recreation.

- (3) Indications of sickness:—Objective symptoms; temperature; pulse; respiration; general appearance; voice; tongue; cough; appetite. See also general course of study in hygiene, Appendix P Signs of illness.
- (4) Equipment and care of sick room:—Heating; light; ventilation; beds and bed making; to change a pillow or sheet; lifting the patient in bed.
- (5) Baths and bathing:—Care of mouth and teeth; to brush the hair; foot bath or sponge bath; the alcohol rub.
- (6) Medicines and other remedies:—Amateur dosing; patent medicines; sprays and gargles; the household medicine closet.
- (7) Application of heat, cold, and counter irritants:—Inflammation; hot applications; cold compresses; mustard paste.
- (8) Communicable diseases:—Incubation period, colds or other slight infections; quarantine disinfection; care of hands and utensils; terminal disinfection or fumigation.
- (9) Common ailments:—Headache; fainting; nausea and vomiting; hiccough; diarrhoea; constipation; earache; croup.
- (10) Common emergencies:—Foreign bodies in the eye; prickly heat; nose bleed; cuts; bruises; burns and scalds. See also the course in first aid under continuation school hygiene, and the twelfth grade course in industrial hygiene.

c Unit. Care of Young Children

- (1) Babies:—Clothing; sleep; fresh air; how to bathe and dress.
- (2) Babies:—Care of eyes; ears; mouth; nostrils; development of habits.
- (3) Babies:—Exercise, plays, toys; avoiding fatigue and excitement; regularity of habits.
- (4) The young child:—Requirements for sleep and bathing; regular habits; enlarged tonsils and adenoids.

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XIV. INDUSTRIAL

A. *Aims*

One aim is to give the continuation school pupil instruction of a trade extension or trade preparatory nature, which will make him more efficient on his present job or on the job he hopes to have.

Another aim is to give the pupil industrial work of a prevocational nature which will help the pupil in his choice of a permanent occupation.

B. *Content*

1. Many of the jobs which these pupils have are in a borderland which is not definitely commercial or industrial. In the course of study on commercial work detail was given on distinctly commercial juvenile jobs like messenger or bundle girl. But no mention was made of work such as that of a telegraph messenger boy, of an office boy, or of a bundle-delivery boy for a small store. Other jobs are on highly subdivided operations in the manufacture of textiles, shoes, paper boxes, hardware, etc. The instructional content for these jobs is in two classes:

- a. For developing manipulative skill
- b. For developing general knowledge about materials and business organization and the important habits which are essential to success on the job of the pupil

2. In this field, training in manipulative skill must be left to the employer and the foreman. There is, however, among employers, a rapidly growing belief that the function of a foreman is to teach as well as to get out production. Courses in foreman training are given in many plants. Where foremen trained as instructors are available and the cooperation of employers and school officials is assured, two hours of the eight hours per week required for school attendance can be profitably devoted to such instruction. The instruction takes the form of training for promotion. Pupils are not to be exploited by being kept at repetitive work.

3. The constant effort in continuation school instruction must be to apply instruction to a specific situation. Thus in developing general knowledge about textiles the discussion should center on the fibres used in the factory where the pupils work. The study on business organization should be applied to the same factory and should involve the names of persons and of departments in that factory. This is quite different from the work suggested in the section on Guid-

ance, where an outline was given for making a study of an occupation in order to help pupils to make a choice. Here the teacher and pupils must analyze the occupation to determine methods of increasing efficiency on the present job and information helpful when applied to the job.

4. All the foregoing applies to both boys and girls. What follows applies to boys only. A few boys will be found who are already in such jobs that instruction in school shops in woodworking, metal work, printing, etc., has a trade preparatory or trade extension content.

The great majority of boys, however, are in jobs where the instructional content discussed in paragraph 2 is so meagre as to be negligible, and, so far as their future jobs are concerned, they have little or no plan. Such boys need prevocational shop work covering as great variety of experience as possible.

5. In the community where the number of pupils is so small that only one shop can be maintained, the need for variety of prevocational experience is best met by installing a general shop. This shop is described in detail in the section on industrial arts training for grades seven, eight, and nine.

6. In the larger schools the general shop serves to furnish the pupils a preliminary try-out experience. This is followed by more intensive courses of the unit trade type in special continuation school shops of the largest schools, or in the part-time use of the high school unit trade shops in the medium sized schools. In these unit trade courses the boys who are on a trade preparatory or trade extension basis can be included in classes with boys who are on the prevocational basis. Some or all of the following courses should be provided; drafting, electrical, machine shop, printing, woodwork, sheet metal work.

7. Without neglect of bench work, the content of instruction for continuation school boys should contain considerable training in the use of machines and the construction of class projects. These boys like to make worth while individual projects, especially where they enter the continuation school young enough to look forward to many months of instruction. But they also like to see production move along and eagerly participate in class projects. Some of the most successful of these have been the making of a complete set of cafeteria tables and stools; a set of drawing tables for their own school or another school; delivery boxes for books from the public library; a hundred kindergarten chairs, child's rocking chairs, or kiddie cars; a dozen household ash cans; galvanized water pails; coal hods; dust pans; canteens; nail sets, screw drivers, lathe centers, woodworking

vices, column grinders with counter shaft and pulleys. On some of these articles a boy prefers to make his own project in entirety. On others, like a kiddie car or chair, he likes to take one out of the lot at the assembly stage and finish it for himself. This type of work implies that the shop should have equipment capable of turning out projects of commercial size and marketable standard.

8. Exercise work should be kept down to the minimum prescribed for elemental construction. The same is true of simple projects like necktie racks which are little more than exercises.

9. The instructor must be constantly alert to the fact that the most important function of the school shop is instruction, not production. He must not permit that his shop projects be determined by his own zeal for production; by the pupils' eagerness to do this work; or by pressure from without to undertake work that at the time cannot be justified on an instruction basis. The pupils should not be exploited. The only justification for undertaking a specified project is that it furnishes instruction needed at that time by that group of pupils.

C. *Methods*

1. For the group of boys or girls in courses concerned with industries like textiles or shoe making the instruction in manipulation must be confined to auxiliary training given by foremen in the plant. The technical instruction in school is restricted to information on related subjects. To acquire this specialized information requires much study at the place of employment by the teacher, and close cooperation with the employers.

2. For the group of boys in courses conducted in school shops the methods are those of industrial arts or unit trade course instruction, with the following exceptions.

In a junior high school the general education value as well as the prevocational value of the course is a factor. The continuation school boy is further advanced on the path where he must make a choice. Therefore the prevocational or try-out features of the course should be emphasized.

The junior high school boy is still sufficiently interested in school to be willing to devote all his time to attending school; but the continuation school boy has gone as far as he can in the endeavor to separate himself from school. In the case of many individuals the interest and the knowledge acquired in the school shop are capable of motivating the other studies. The shop instructor is therefore in a position to exert a powerfully beneficial influence on the continuation school boy. In so far as he informs himself concerning the boy's ambitions and capacity and establishes sympathetic personal re-

lations with the boy, he can help the boy at a very critical period of his life.

In the unit trade courses the high school boy has had the benefit of the prevocational courses and presumably is pursuing a unit trade course because of a fairly well established vocational choice. But most of the continuation school boys have had a much briefer experience in prevocational shops and to them the experience in the unit trade shop is still largely prevocational. Others, however, of the continuation school boys are in the trade preparatory or trade extension condition. Because of their employment experiences they are likely to show unusual skill and unusual tenacity of purpose in pursuing the work of the shop. The skilled instructor quickly classifies the boys in his own mind and handles them accordingly. A further corollary from this same situation is that for most of the continuation school boys the equivalent of unit trade instruction will come after they have left the continuation school and have entered the evening school.

D. Outline of a course for Pupils Working in a Worsted Mill. Similar courses can be developed for pupils employed in such establishments as silk mills, hosiery mills, and shoe factories.

1. *Mill subjects.* For two hours each week the pupil receives shop instruction from a foreman, preparing him for his next promotion. A report on each session is made on a printed form to the continuation school teacher and becomes part of the permanent school record of the pupil.

2. *Related Subjects.*

- a. Mill terms:—Occupations, as sorter, scourer, comber, doffer, etc.; machines and parts of machines, as gill-boxes, reducers, bobbins, heddles; kinds of cloth manufactured, as serge, tricotine, prunella, poplin; miscellaneous, as knots, slubs, floats, emulsion.

- b. Wool:—Wool bearing animals, as sheep, goats, camels; methods of obtaining wool, as shearing, pulling, plucking; characteristics of wools, as carding wools, combing wools, carpet wools; wool markets and transportation.

- c. Mill excursions. A classroom explanation, a trip of inspection to one operation, discussion and written report on the trip. Such operations as scouring; carding and combing; drawing; French drawing; spinning; spooling, warping and sizing; drawing in and twisting; weave shed; perching, burling and mending; wet finishing, dyeing and carbonizing; tentering, perching, singeing, pressing, measuring.

- d. Hand weaving:—Designing both by interwoven paper strips and the cross ruled paper of the designer. Producing the weave by

hand on small wooden frames. Comparing this with the machine weave. The lessons include plain weave, basket weave; bedford cord; original designs.

E. *Courses in Elementary Drafting and Working Drawings.*—These are outlined in the continuation school section on applied art.

F. *Courses in Shop Work.*

In the larger schools where the general shop serves the purpose of a reservoir class, pending the time when pupils can be transferred to the special unit trade shop, the course and equipment as given in the section on industrial arts are adequate.

Where, however, as in the small schools, the general shop is the only shop available, or, as in the larger schools, shops of the unit trade type are available, the industrial arts course for the upper grades is too elementary and part of the material for shop instruction should be selected from the unit trade courses. That is, a prevocational course should be built up by selecting projects from the industrial arts course and from the elementary divisions of the unit trade courses. Among these projects the instructor will have no difficulty in finding projects or parts of projects which are suitable for those pupils who are in the trade preparatory or trade extension stage. This work will be given in a general shop in the smaller schools and in the unit trade shops in the larger schools.

Where the work is given in a unit trade shop, transfer from one line of work to another at the end of a suitable period should be possible. In this way the need of the pupil for variety of prevocational experience is met.

Detail on lesson planning for continuation schools, involving both shop work and related work, has already been presented.

A suggestive list of operations and projects in which continuation school boys are capable of doing excellent work is here given. The instructor should make selection according to local facilities and should at any time modify or substitute a project so as to meet local conditions to the best advantage.

In general the best procedure for the continuation school is to select class projects which can be analyzed into instruction units suited to the needs of individual pupils. At any time when such class projects are not available the instructor can fall back on the individual projects.

1. *Woodwork Projects.*

a. *Individual Projects*

Plant trellis, fan shape:—rip sawing: need of straight grained wood.

- Necktie rack:—Boring tools; screws; staining and waxing.
- Hand loom:—Nails; glue; weaving.
- Box kite:—Theory of kite flying and construction; strength of material.
- Flower box with trellis:—Need for water tight lining. How to secure drainage. Where placed inside house.
- Nail or screw tray:—Size of nails and screws, number of compartments to hold usual sizes.
- Bird house:—Habits of birds, effect of spice or paint odors in packing boxes used for bird houses.
- Bench hooks:—Boring for screws. Lubricant on screws. Uses of bench hook.
- Shoe polishing box:—Special features of construction.
- Cutting board—glued:—Methods of joining boards, gluing and clamping.
- Camp stool:—Use of bolts. Strength of different fabrics for seat.
- Water wheel:—Effect of water on wood. Places to use wheel.
- Automobile creeper:—Castors and how to apply. Design for high and low slung cars.
- Tool chest:—Design depends on use. Trays—metal corner locks.
- Parts of radio:—Radio design—development of underlying principles.
- Stool (foot) or seat:—Joints. Kinds of construction. Effect of screws in end grain.

b. Productive Work on Class Projects

Cafeteria stools and tables, folding chairs, drawing stools, bulletin boards, concrete bench ends, drawing tables, plant stands, kindergarten chairs, kiddie cars, children's chairs of morris and rocking type, screen doors and window screens, sewing tables, library tables, book shelves. Use jigs and short cuts on this.

All this work gives opportunity for instruction in fundamental operations as well as for experience in shop organization on a factory basis.

c. More Difficult Individual Projects

Cedar chest, large tool chest, phonograph case, table with simple inlaid top, checker board, inlaid phonograph record case, piano stool, electric stand lamp or table lamp.

All points previously included, with extensions on precision in measurement, excellence in construction, and special skill and knowledge in finishing.

2. *Machine Shop Projects.*

Sawing

Power hack saw:—Operating saw including measuring and clamping of piece. Cut to rough dimensions.

Hand saw:—Saw to line, make saw cuts straight and square with given surface.

Drilling

Layout for simple drilling, holes located by punch marks.

Operation of drill press including selection and inserting of drill, clamping of piece, use of jig, use of numbering dies to mark drills or work. Centre punching, clamping cylindrical pieces for centre drilling.

Projects:—Braces, angle irons, dowel plate.

Lathe Work

Operation:—Start, stop, lubrication, use of oil. Place centered stock in machine, select right tool, set tool, adjust and feed tool. Prepare for rough turn. Repeat for fine turning, straight turning and facing ends to length on centers.

Projects:—Beginnings for metal screw driver or milling machine arbor.

Turning more than one diameter on piece between centers and squaring ends. Locating and facing shoulders. Use of stops. Rough and finished turning.

Projects:—Milling machine arbor about 6" long, use $\frac{7}{8}$ " to 1" stock, turn to about $\frac{5}{8}$ " to $\frac{3}{4}$ ". Finish two shoulders about $\frac{5}{8}$ " diameter, ends smaller. Rough and finished turning on ends, filed on center sections. Linear dimensions to $\frac{1}{64}$, diameter to .001. Calculation of cutting speed.

Straight turning, knurling, form turning, taper turning to caliper size.

Projects:—Screw driver handle. Nail sets, center punches, ball peen hammer head.

Chucking and boring, turning, facing and cutting off in chuck. Accurate boring and reaming, grinding tools. Use of four jawed independent chuck. Finishing, polishing.

Projects:—Screw driver handle, small gear blank, nail sets, center punches.

Forging, hardening and tempering.

Projects:—Lathe centers, screw driver blade, center punches.

Taper turning and fitting. Use of taper attachments. Setting tail stock off center. Use of compound rest. Use of grind-

ing attachment or portable grinder for 60° angles on lathe centers.

Screw cutting, V or U. S. standard threads on ordinary work.

Projects:—Machine screws, clamp screws.

Cutting square threads. Boring to proper size and inside threading. Straight turning and facing to micrometer sizes.

Other Projects:—clamps, small jack, vise screws, pinion and shaft for grinder, machine bolts, step blocks, calipers, chisels, toolmakers clamps, adjustable parallel, parallel clamps.

This covers 40 two hour lessons in the shop. Few pupils go beyond this point.

Advanced Work

Repetition on former operations. Milling machine on plain milling, instructor makes set up. Pupils can progress to the point where they cut gears.

Simple shaper work on horizontal surfaces.

Projects:—Key ways, clamp jaws, vise jaws.

Good Class Projects. Braces, brackets and other metal parts for wood working projects; a set of wood working vises, column grinders with counter shaft, bench grinders, small bench lathe, one cylinder gas engine, out-board row boat motors, set of milling machine arbors, breast drill, paper punches, pulleys, shaft couplings, plum bobs, paper weights, bell center punch, surface gauge.

3. *Sheet Metal Projects.*

Practice on fluxes:—Handling.

Soldering:—Handling and filing coppers. Home repair work.

Cookie cutter:—Pattern, cut, double hem, form, solder.

Doughnut cutter:—Pattern, cut, burring machine, form solder.

Pint tin cup:—Pattern, cut, wire, form, roll, solder.

Sink strainers:—Elevation and plan—radial line. Cut, wire, punch holes, form, solder.

Quart measure flaring cup:—Elevation and plan, approximate pattern. Cut, wire, form, solder.

Ash barrel:—Pattern for ribs. Cut, wire, groove, seam, double seam. Bottom—rivet, brake.

Water pail:—Elevation and plan to scale. Develop pattern—radial line. Cut, wire, form, seam, rivet ears, form bail.

Funnel:—Elevation and plan. Develop pattern, transfer to metal. Radial line. Cut, wire, seam, form, solder.

(26 lessons to this point.)

Other Projects:—Gasoline funnel, coal scuttle, three piece 90° elbow, T joints, Y joints, refrigerator, motion picture film containers, canteens, paint and oil containers, dust pans, electric light shade.

Wiring on flat surface, turning machine, setting down seams, cornice brake. Double and single seaming, parallel line and triangulation development.

Transition pieces, two pipes different diameters, miter pattern cutting, hopper register box from square pipe to round, rotary ash sifter.

(26 additional lessons to this point.)

4. *Electrical Projects*:—Working sketches on everything.

Battery:—Circuit, series, multiple. Test with volt ammeter.

Bell:—Temporary magnet, wiring of bell. Install simple bell and push button.

Bell:—One bell, two buttons in series, two in multiple.

Bell:—Two tenement house. Two front door buttons.

Bell:—Controlled in three places by buttons, multiple.

Bell:—Same in series.

Bell:—Ring and return ring. Three wires.

Bell:—Same, one wire and ground.

Annunciator:—Three push buttons.

Telegraph:—Magnet principles. Wiring.

Telegraph:—Install sender and receiver.

Telegraph:—Relay.

Induction coil:—Principle.

Telephone:—Induction coil, working.

Telephone:—Install for connection.

Telephone:—Two party, install.

(17 lessons to here.)

House Wiring

Outlet box:—Install.

Outlet box:—Wire, insurance rules for knob and tube work, circuit from cut-out cabinet to outlet.

Single pole switch installed, knob and tube junction boxes.

Double pole switch.

Bx installation.

Grounds on bx.

Assembly of fixture.

Install fixture complete.

(9 additional lessons to here).

Conduit Work

Cutting and threading pipe.

Offset—single, double, elbow.

Install, with single and double pole switches.

Three way snap switch.

Electrolier snap switch.

(9 Additional lessons to here).

Other Work

In addition, units can be constructed on *moulding and cleat work*, about ten lessons; on *generator, motor and switchboard*, up to a year's work; on *repair work and trouble shooting* on house bells, lights, fans, irons, toasters, washers, sweepers, according to local conditions.

5. *Printing Projects.*

a. Elementary composition and press work.

Cases:—California job cases; new case; triple and quadruple cases.

Lay of case:—Learn lower case sections; capital sections; spell out words and sentences including use of logotypes.

Special study of b, d, p, q, and spaces and quads.

The point system, type dimensions, the pica and nonpareil.

Composition:—Making up a stick; the composing rule; setting type; leads and slugs; justifying a line; rules for spacing; emptying the stick; use of galley; tying up, distribution and caring for materials.

Pulling and correcting proof:—Taking proof; marking and correcting errors; using proof press; cleaning; distributing type.

Calculation:—Size of type, estimating in ems; study of type faces.

Pressfeeding:—Starting and stopping; handling stock on feed board; feeding; care of sheets.

Care of press:—Oiling, inking, feeding, setting gauges; washing up.

b. Styles of composition:—Caps and small caps; punctuation—period and comma; division of words; indentation; setting poetry; leader and figure work; double justification.

c. Elements of job composition:—Type faces and materials; spacing; styles of job composition; job distribution, elementary display.

Small forms:—Envelopes; letterheads; billheads; statements; shipping tags; labels; handbills; business cards; card forms for school use; receipts; business forms, holiday printing.

Presswork:—Locking up job forms; simple make ready; overlay; underlay; preparing the tympan; inking up; placing the form; getting uniform impression; use of frisket.

- d. Operations on material:—Receiving, handling and cutting stock; folding; stitching and trimming; wire stitching; punching; perforating; padding; scoring and cutting; estimating quantities; cutting and trimming.
- e. Special operations:—Setting up, skeletonizing, printing on two color form when colors do not overlap; lay out and set up of simple cards, tickets, title page, simple embossing; casting off and setting up more difficult work; printing two color work with frisket; title page with diamonds and half diamonds; with panels and squares; initials and cut in notes; running around cuts.

G. Bibliography

See also the complete bibliography in the syllabus on Industrial Arts Education and Vocational Industrial Education.

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XV. MANNERS AND CONDUCT

A. *Aim*—To train the pupils to be courteous and thoughtful in their relation with one another and with other people.

B. *Content*—Some of the material here suggested might be given in connection with instruction in civics. Some of it perhaps belongs in a course in home economics, but it applies to boys as well as to girls. Some of it can be the subject for consideration in oral or written English. Some of it is guidance. Where and when the instruction is given is not so important as that a place be made for it somewhere in the day's work.

C. *Method*—The material should be presented with tact and sincerity. It should result in direct application in the daily lives of the pupils. Caution should be used to avoid sermonizing and to avoid hurting the feelings of an individual pupil.

D. *Topics*

1. Personal cleanliness as regards bathing; clean hands; face; finger nails.
2. Care of the hair; brushing the hair.
3. Care of the shoes, repair and polishing.
4. Chewing gum, cosmetics, cigarettes, as detracting from an admirable personal attitude and as determining the opinion which other people form of one.
5. Practical points on cleansing and pressing suits, neckties hair ribbons. Boys especially need considerable instruction in this field.
6. Practical points on keeping clothing in repair. Boys should be taught to sew on buttons, mend a ripped seam, clean a hat.
7. Thoughtfulness for others at home. Hang up clothes; brush muddy shoes before entering the house; be on time for meals; wipe out a wash bowl or bath tub after using it; avoid cutting remarks and quarreling in the home; avoid noise which may be annoying to other members of the household or to neighbors.
8. Boys should be cheerfully helpful. Dry the dishes, sweep the sidewalk, beat a rug, fill the wash tubs.
9. Home care—This is not simply a topic for girls in home economics. The boys also will soon face family responsibilities. They need instruction on the care and manage-

ment of the household; on sanitation in the home; on the family budget and the personal budget; on the symptoms of ordinary sickness.

10. Unpleasant conduct in public, boisterous laughter, crowding and pushing, coughing, sneezing, spitting, use of handkerchief.
11. Proper conduct in the trolley car; at the theatre; in church; on the street; at a social gathering; at a dance; in school.
12. Proper conduct for an employee in the factory; in the office; in a private house while working there.
13. Courtesy to sales persons; to conductors; to ushers.
14. Respectful greeting to employer; to minister; to teachers; to older people; to ladies; to public officials.
15. Table manners at home. How to prepare the table. How to serve food. Proper conduct and conversation at the table.
16. Proper conduct in a restaurant. Procure sample menu cards and discuss the choosing and ordering of a suitable lunch or heavy meal. This is especially important for boys. In this connection they need considerable instruction on the selection of food and on keeping themselves in good physical condition.